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Cincinnati Univ, Ohio Southwestern Ohio Regional Computer Ctr

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Model State Information System
Training Program

Volume IV

Instructor's Handbook

For

SELECTION PROCESS

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Ellen G. Miller
Project Manager, OWS-77-01

INTRODUCTION

This Instructor's Handbook is one of six prepared for the U.S. Environmental Protection Agency's Office of Water Supply by the SouthWestern Ohio Regional Computer Center (SWORCC). It's purpose is to help instructors teach State and EPA personnel about the Model State Information System (MSIS). Specific information is presented on:

- The course
- Units comprising the course
- Content of each unit
- Instructor preparation
- Recommended presentation
- Evaluation

The handbook was designed with the expectation that two uses will be made of it: 1) During on-site visits to States by the SWORCC training team, and 2) by State personnel during subsequent training within the State. Although it is felt that both content and suggested sequence of material contained herein will be optimum for most trainees, it is realized that State training needs will vary. This handbook was assembled in loose-leaf format, and the course itself was designed to be flexible. Both flexible physical format and organization will be helpful to those States that use the handbook for future training of State personnel.

The handbook has four parts: Design Criteria, Team Procedures, Course Content, and Course Reference Material. Part III, Course Content, contains the real heart of the handbook and takes a formal approach to training. It will be noted that specific goals and behavorial objectives are listed for each training unit together with self-measurement techniques and recommended achievement levels. Pre- and post- tests are used to evaluate the degree to which participants attain course goals and behavioral objectives.

Since trainees will be furnished a Participant's Handbook, the instructor should become familiar with its contents. It is intended that all trainees will use their own copy of the appropriate Participant's Handbook throughout the course, and will retain it for future reference. It is assumed that trainees will learn the most about MSIS if they take all the courses offered. However, each course was designed as a free-standing, complete entity to accommodate partial attendance by trainees.

One last introductory comment. Part I of this handbook, Design Criteria, tells how the MSIS training program evolved, but also discusses the criteria used to design the program -

assumptions, needs assessment, limiting parameters, teaching methods, and training philosophy. Familiarity with this background will increase overall understanding of this handbook and of the entire MSIS Training Program.

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Model State Information System

Part I

DESIGN CRITERIA

MSIS

INTRODUCTION

The purpose of this portion of the handbook is to convey to the user information which, though not directly concerned with course content, will aid in achieving a fuller understanding of the entire MSIS Training Program. The MSIS Training Program consists of six courses. They are:

- MSIS Overview
- MSIS Subsystems
- Data Entry
- Selection Process
- MSIS Components
- System Specifications

BACKGROUND:

The responsibility for implementing the Safe Drinking Water Act of 1974 was delegated to the Office of Water Supply (OWS) of the U.S. Environmental Protection Agency (EPA). In order to provide the States and EPA Regions with the capability to fulfill their basic responsibilities for monitoring water quality, as required by the Safe Drinking Water Act, OWS entered into a series of contracts.

The first series, with American Management Systems, Inc. (AMS) of Arlington, Virginia, resulted in both the concept of an informational system and its computerized version (the Model State Information System).

The second series of contracts was with the SouthWestern Ohio Regional Computer Center (SWORCC) of Cincinnati, Ohio. One major contract was to perform the detailed systems design, programming, testing and documentation of the computerized Model State Information System (GSA Contract No. GS-05S-10458, Task Assignment No. OWS-76-02).

Installation Plan - Phase 1, the other major contract, was identified as Task Assignment No. OWS-77-01, under the GSA Contract. The dual purposes of that task were as follows:

- Assist the EPA Regions in ascertaining the needs of the States and Regions for aid while installing the MSIS.

- Develop training packages based on Regional recommendations.

The MSIS Training Program is a direct result of this latter contract.

TRAINING PHILOSOPHY:

The SWORCC training philosophy can be stated briefly as follows: Every training program should contain five distinct phases - goal setting, needs assessment, activity planning, activity conducting and evaluation. Subsequent paragraphs will relate each of these program phases to the MSIS Training Program.

Goal Setting: The need for goals is obvious and most programs have them. Usually, however, they are stated in vague terms; as a consequence, progress toward obtaining them may be difficult to measure. In this instance the broad goal was established when the Office of Water Supply directed SWORCC to develop a training program for the MSIS. Within the training program, a specific goal has been listed for each course, and for each unit within a course.

Needs Assessment: The needs assessment phase is absolutely necessary to focus the training effort. First, it is here that information is gathered on the current training level of the population to be trained. Second, if properly designed, it gives that same population some input into decision-making on the program itself as to kind, amount and length of training. Therefore the program can be designed more nearly to suit not only the needs but also the desires of those to be trained. The resulting motivation on the part of the trainees is of subsequent benefit in enhancing transfer of training from the training environment to the job setting.

For MSIS, the needs assessment phase was accomplished through the use of Background Information Packages (BIP's) which were distributed to all States through the ten EPA Regional Offices. The information from the BIP's was used in making decisions on the type, amount, and length of training.

Activity Planning: The educational research literature was drawn upon heavily during activity planning. The finding by Dubin and Taveggia** that all teaching methods are equivalent gave complete freedom to choose a variety of instructional techniques to maintain both trainer and trainee interest. Knowles' discussion of adults and the learning environment was felt to be especially applicable to the training environment. First, he observes that an adult perceives himself to be wholly self-directed and tends to resist learning under conditions that are incongruent with this self-concept of autonomous individuality. Because of this, the learning climate should be one in which adults feel at ease and the psychological climate should be one of respect, acceptance, and support; the evaluation of learning should be free of value judgment and should focus on self-evaluation and a measurement of progress toward a goal.

Second, Knowles points out that adults, by definition, have a large volume of varied experiences available to them and that if these experiences are not used or are minimized, the adult feels rejected as a person. Here the implications point toward group discussion and practical application of the learning experience. Finally, Knowles tells us that adults have a perspective of immediacy of application of learning - a problem-centered frame of mind - and suggests that all adult learning experiences should commence by a sharing of common problems.

We concur with these research findings; they are reflected in our requirements for an adult learning environment (a large comfortable room, movable chairs, newsprint rather than blackboards, coffee, self-evaluation, etc.); recognition of valuable previous experience of trainees (small group discussion, large group discussion); and allowance for immediate application of learning (simulation, problem solving, and hands-on practice).

Activity Conducting: The activity conducting phase of a training program, though certainly always present, does seem to have been the key to the past failure of many otherwise excellent technical training programs. Mannion expressed this quite clearly during a visit to SWORCC in December, 1976. He felt that the U.S. government has had good success in the past with the development of sound technical programs, but that the failure of such programs had often been in the implementation phase. He attributed this failure to poor instructor training and poor transfer of training from the training environment to the job setting. SWORCC has strived to reduce both problems in the design of the MSIS Training Program.

The problem of instructor training was attacked directly by having the University of Cincinnati's Faculty Resource Center (FRC) conduct the necessary training. Grasha's approach to MSIS instructor training was similar to that previously found useful by the FRC with faculty at the University of Cincinnati. Essentially, a team approach was applied whereby practice sessions were held using actual MSIS training literature. Observations (audio or visual, as appropriate), were made and feedback sessions were held.

The teams formed were basically the same teams that conducted training in the field and, when possible, the FRC staff member spent 1-2 days on-location with the team during early State visits. Keeping the same persons assigned to one teaching team facilitates formulative evaluation, which is the ongoing improvement of the training program due to student feedback and trainer perceptions. Using an FRC teaching expert to help the team during its on-site visit also aids in formulative evaluation.

Goldstein speaks directly to the problem of transfer of training and lists two areas as being especially pertinent: Trainee motivation, and the similarity of training and the job environment. The SWORCC design has focused on trainee motivation during MSIS instructor training, as well as during on-site training. Knowles' comparison of pedagogy (teaching of children) with andragogy (teaching of adults) was used when designing maximally motivating content and teaching methods. Extrinsic motivations by instructors in the form of praise, encouragement, etc., was incorporated into the instructor training. The "hands-on" technique of training employed to input data to the computer employs Knowles' concept of problem-centered training and Goldstein's recommendation for similarity of job and training environment.

Evaluation: The last item in the SWORCC training philosophy, and perhaps the most troublesome, is evaluation. The training literature is of little help here since, as Goldstein points out, very few training programs are evaluated at all. Those discussions which do appear in the literature seem to concentrate on the training environment and techniques used there with little attempt to relate these techniques to job performance. The MSIS Training Program uses a simple three step evaluation process: Pre-test and post-test on the training material, and continuous evaluation of the learning process.

Some specific methods of continuous evaluation are: daily, written feedback from trainees; daily process or evaluation by the training team; use of an observor on the training team; and debriefing of the training team by the project managers.

INTENDED USE:

Perhaps the best way to convey intended use of the MSIS Training Program is simply to list the more important assumptions made. For convenience, they are listed under Trainee, Trainer, and General:

Trainee Assumptions:

1. Each trainee will not necessarily attend all MSIS training courses offered.
2. Each trainee will have a participant handbook available to him/her during the training period.
3. The number of trainees will be between five (5) and thirty (30).
4. Those attending training sessions will not know each other.

5. Persons selected to attend are responsible professionals concerned with satisfaction of problem-oriented needs.
6. Trainees will (generally) be expected to act as instructors to train other personnel in their area.
7. Trainees will need a brief data processing orientation which defines DP terminology, etc.
8. Trainees must be provided the general context of MSIS (the Safe Drinking Water Act, Regulations, etc.).
9. Those successfully completing the training (Unit, Course, MSIS Training Program) will be able to confidently apply the skills gained when returning to the job environment.

Trainer Assumptions:

1. A minimum of two trainers is available for each training session.
2. Trainers are fully qualified in both course content about and functions of MSIS.
3. Trainers are fully cognizant of and qualified in instructional techniques required to obtain a maximally effective training environment.
4. Trainers practice observation/feedback techniques to insure continuous improvement of the training process.

General Assumptions:

1. Any course, and any unit of any course within the entire MSIS Training Program, can be conducted independently with appropriate introduction to set context.
2. On-site training is conducted in each State for that State as directed by the Office of Water Supply.
3. Courses will be used by many States to train their own personnel following the on-site visit by the training team.

LIMITATIONS:

Assumptions beget limitations and it is well to end this discourse to the user by focusing his or her attention on the things that the MSIS Training Program cannot do.

It is impossible for one training program to fulfill the diverse needs of thirty or more States. This program is a prototype based on SWORCC's interpretation of the common needs of the States as expressed in the BIP's. MSIS training is tailored to specific and diverse needs as exemplified by providing a unit for optional material with each course.

MSIS is not a simple computer system. The instructor must know about MSIS and have used it to prepare for training others; this handbook alone cannot instruct the instructor. However, it does provide a framework for organizing what is to be taught about MSIS and gives brief information that will focus the instructor on major areas to be taught.

It is realized that some troublesome areas may exist. These areas of confusion must be identified and corrected by the user through observation, question, interpretation of evaluation results, or other methods.

MODEL STATE INFORMATION SYSTEM

PART II

TEAM PROCEDURES

Purpose

The purpose of this portion of the handbook is to provide a checklist of all the actions required of the training team to insure a successful training effort. This section was written especially for use by the three-person teams that will visit States to teach water division personnel about MSIS.

States wishing to have their own personnel use these materials to train other in-State personnel may find it necessary to modify the activities listed here.

Description

Part II, Team Procedures, consists of the following sections:

- Management philosophy
- Organization
- State visit list
  - A. Pre-visit activities
  - B. On-site activities
  - C. Post-visit activities
- Policies and procedures
- Kickoff
- Warmup
- Evaluation
- Forms

These sections should provide the training team with most information needed to prepare for and report about on-site training.

Management Philosophy

The sole purpose of the MSIS Training Program is to help State and regional personnel learn about the Model State Information System, which in turn aids States and regions in monitoring the quality of public drinking water. Correspondingly, the MSIS training philosophy is to provide service and support to States and regions through a training program that moves from the general (Vol. I, MSIS Overview) to the specific (such as Vol.IV, Selection Process and Vol. VI, System Specifications). The individual who follows the progression of courses will end up with knowledge that should expedite his daily use and operation of MSIS.

The training teams are service-oriented. This means that they answer questions, teach courses, lead discussions, run workshops, and try to impart maximum knowledge about MSIS to trainees.

Service orientation also means that the teams utilize a maximum amount of two-way communication, which increases participation and a sense of ownership among trainees; that questions are encouraged at any time, for the unasked question means that subsequent teaching material will not be understood; and that the most participative teaching methods possible are used, for the trainees are professionals with valuable knowledge and insight.

In short, the MSIS training philosophy is respect--of trainees by the team; of each team member by the others. The goal is maximum knowledge learned by trainees, who will use MSIS daily. Any communication and teaching method that facilitates the goal is valid and should be tried out.

Organization

Two teams comprised of three members will train State and regional personnel in four of the six MSIS Training Program courses. Those four courses are:

- MSIS Overview
- MSIS Subsystems
- Data Entry
- Selection Process

The first course is intended for both water division and ADP personnel; the remainder were created for water division personnel. The three team members and their corresponding duties are:

1. Senior Teacher -- Handles most teaching and all administrative tasks while onsite.
2. Junior Teacher -- Handles some teaching assignments; coordinates equipment and supplies; and provides backup to the Senior Teacher.
3. Observor -- Responsible for all evaluation activities (observation of teaching methods, pre- and post-tests, exercises); keeps all written forms (evaluative and administrative).

The three team members will debrief together daily to assess the trainees' progress in learning about MSIS, and to assess the effectiveness of the teaching method. These debriefings will be recorded in the team log. Through debriefings and the team log, the team will correct its own problems, thus achieving the formulative evaluation cited in Part I. The dynamic process of performance, observation, feedback, and correction will result in continuous improvement of the training process.

State Visit List

Many steps are required of team members before, during, and after each State visit. The purpose of this set of steps is to (1) prepare the team as fully as possible for the State visit; (2) utilize resources and manpower in an economical fashion; (3) adhere to the national calendar of State visits with a maximum number of changes; and (4) provide unambiguous criteria for carrying out tasks during the State visit.

The set of steps listed below covers a training team's pre-visit activities, on-site activities, and post-visit activities. Management techniques used include checkoff lists, written reports, and meetings between the teams and the project manager.

Each list of activities contains:

1. Sequential steps

2. Who's responsible for the step

   --ST = Senior Teacher

   --JT = Junior Teacher

   --OB = Observer

   --All = Each team member

3. Explanatory comments

A. Pre-visit activities

Step	Who	Comments
1. Review all of this section	All	
2. Review Part III of each Instructor's Handbook	All	You're responsible for all course content and for answering questions.
3. Review each Participant's Handbook	All	You'll help participants better when you know what their handbooks contain.
4. Examine State visit data	All	Study the detailed information provided from the State Checklist. It will include: . Training facilities . Trainee numbers and type . Name of State training contact . Dates of visit
5. Examine prior team logs	All	Comments in team logs may help.
6. Call State water contact	ST	Verify all State data pertaining to training. Discuss facilities; get his home phone. He is the key person to aid you while onsite.
7. Prepare course modifications	All	Using State data and team logs, prepare any additions or deletions needed. Use Form 1, Course Modifications.
8. Decide on Kickoff method	All	See Kickoff, this section.
9. Decide on type(s) of warmups to use	All	See Warmup, this section.
10. Fill out a daily agenda for each course offered	All	Use Form 2, Daily Agenda.
11. Order all material from Materials Coordinator	JT	Use Form 3, Water Team Materials Inventory, with specific data for this State. Do this at least 5 working days prior to departure.
12. Check off inventory of materials received	JT	Use Form 3.
13. Hold departure briefing	All	Meet with project manager to discuss: a. Course modifications b. Course warmups c. Daily agendas

Step	Who	Comments
13. Hold departure briefing, con't	All	d. Accomodations e. Travel arrangements f. Conversations with State contact g. Policies and procedures Leave copy of Forms 1-3 with the project manager.
14. Last call to State water contact	ST	Set up time and place for first meeting

B. On-site activities.

Arrival day -- Step	Who	Comments
1. Meet with State water contact	ST	Verify with State water contact that the State Checklist is true. If any required items are not obtainable, follow steps listed on State Checklist. Annotate State Checklist for all items and their status when onsite.
	All	Visit facility if possible; modify as needed.
2. Review roster of trainees	All	Fill out Form 4, Course Roster.
3. Finalize course modifications	All	Information about trainees may require changes.
4. Finalize Warmup	All	
5. Finalize Kickoff	All	
6. Finalize daily agendas	All	Use Form 2.
7. Telephone project manager	ST	Report about onsite situation; phone office or home.
8. Copy all charts	JT	Use newsprint; write BIG so that it is clearly visible at back of room.
Day 1		
1. Go to facility at least 1 hour before start of session	All	Make last-minute changes; locate restrooms, telephones, snack bar, etc.
2. Kickoff for this State visit	ST	Stress: . Purpose of MSIS training . MSIS product of many contributors . Courses to be taught . Materials to be left for State use . Evaluation . Certificate of completion . MSIS training philosophy . Encourage questions . Introduce team
3. Get updated roster of trainees	ST	Pass around Form 4 for all to sign. Get copies made so every trainee has one for himself. Keep the master.

B. On-site activities, con't

Day 1, con't

Step	Who	Comments
4. Warmup	All	Help trainees get to know each other and feel at ease.
5. Course pre-test	OB	Pass out pre-test. Allow 10-15 minutes to fill out both Background Information and pre-test. Collect all papers. Record scores on Form 5, pre- and post-test analysis.
6. Course Content	All	Follow Part III of this Instructor's Handbook.
	OB	Record class analysis on Form 6.
7. During lunch, sign student certificates	ST	Prepare one certificate for each trainee on Roster.
8. Course post-test	OB	Pass out post-test; allow 10 minutes to complete it. Collect all papers. Record scores on Form 5.
9. Award certificates	ST	Personally award certificates to each trainee
10. Daily call to project manager	ST	By 5 p.m. Cincinnati time if possible, call project manager.
11. Team debriefing	All	Daily debriefing to cover: a. results of pre- and post-tests b. problems c. successes d. make up new observor's class analysis (form 6) for tomorrow e. observations f. recommendations (will be typed later and shared with other water team).
12. Write up daily log	Rotate	Write up points a-f in daily log, which will be turned in at end of trip.

Day 2

Repeat Day 1's steps 3-12

B. On-site activities, con't

Step	Who	Comments
Day 3		
Repeat Day 1's steps 3-12		
Day 4		
Repeat Day 1's steps 3-12		
Day 5		
Repeat Day 1's steps 3-12		
13. Give State contact set of MSIS training materials	ST	Use Form 7, Water Training Sign Off Sheet.
14. Have State Contact check off that training was completed	ST	Use Form 7.
15. Thank all local support personnel	All	Especially thank the State water contact for his/her help this week and before the visit.
Departure Day:		
1. Pack all extra material to return to Materials Coordinator	JT	Use Form 3.

C. Post-visit activities

	Step	Who	Comments
1.	Complete a Trip Summary	OB, ST	Use Form 8, Water Team Trip Summary
2.	Have team recommendations typed up from Team Log	ST	Use Form 9, Water Team Recommendations
3.	Trip debriefing	All	Meet with project manager to discuss: a. how it went 1. per trainees 2. per team b. results of evaluation c. written team recommendations d. what other teams need to know Turn in updated versions of forms 1-9 and the team log.
4.	Review Form 9, Water Team Recommendations from the other team.	ST	The other team may have recommendations you can use.

Policies and Procedures

Aside from the procedures outlined for pre-visit, on-site, and post-visit activities, the following rules apply:

1. Follow explicitly the State Checklist, Section 2.0. It contains requirements which the State must fulfill, and whether or not the requirement was promised and verified by telephone prior to the visit.

   Annotate Section 2.0. If a requirement is not forthcoming, take the steps listed in Section 6.0.

2. For other circumstances which appear to prevent carrying out training of water division personnel and cannot be resolved with the State water contact, immediately telephone the project manager. Notify the State water contact of the problem, having called the project manager, and the next steps authorized by the project manager. Carry out those steps in detail.

   In the team log, write up the problem, attempts made to resolve it with the State water contact, time and content of conversation with project manager, and authorized steps.

   Carry out each authorized step, noting all actions in team log.

3. In emergency situations (illness, crisis), call the project manager immediately; if unable to reach her, call the associate project manager at work or home, or the Director, CSD at work or home.

Kickoff

The purpose of kickoff activities is to set the desired tone for the entire State visit. The kickoff, or opening presentation, takes place first thing on Day 1.

Several items must be covered in the kickoff; they are listed more or less in their order of importance.

1. Purpose of State visit: The purpose of each State water team visit is to help State personnel learn as much as possible about MSIS. Why? So that MSIS is maximally useful to this State in meeting the requirements of the SDWA.

2. MSIS is the product of many contributors: While the history of MSIS will be covered in detail today, trainees need to know that the computer system, MSIS is the product of many contributors. It is based on the requirements of the Safe Drinking Water Act and the regulations; its form and requirements have been shaped by several agencies and groups, such as the Office of Water Supply, the Conference of State Sanitary Engineers, EPA regional personnel, and advisory groups.

   The MSIS to be installed in this State has been developed and tested by the SouthWestern Ohio Regional Computer Center, and approved by the Office of Water Supply after an intensive acceptance test at COMNET.

3. MSIS training philosophy: The sole purpose of the water team is to help State personnel, using a variety of methods--teaching course content, answering questions, conducting workshops where trainees practice using input forms and interpreting output reports, giving out self-measurement exercises, and administering pre- and post-tests which measure knowledge gained. The team respects the professional knowledge of trainees, and needs their comments and observations. Questions are encouraged at any time, for the unasked question means later information won't be understood.

4. Courses to be taught: While normally the water team teaches Vols. I - IV, some States have not selected all four courses. See the State Checklist, Section 2.0, for latest information. Tell the trainees what you will be teaching on what day.

5. Material left in State: OWS has authorized the SWORCC water team to leave the following training materials in each State:

   1 slide/cassette package for each of Vols. I-IV, with 2 copies of each accompanying workbook (binders 3,6,9,12).

   1 set of Vols. I - IV for training program (binders 1,2,4,5,
   1 set of camera-ready copy of binders 1-12. 7,8,10,11).

   The DP team will deliver all versions of Vols. V - VI, (binders
   camera ready copy, to the State DP contact. 13,14).

6. Evaluation: Evaluation will be performed in both formal and informal ways. Formal evaluation will be based on a pre- and post-test given for each course; papers will be collected and scored. Informal evaluation will be conducted through self-measurement exercises, which will be completed in class and discussed. The teaching team evaluates itself, relying especially on the observer's analysis of effectiveness of teaching, in daily debriefings.

7. Certificates of completion: Each trainee will receive a certificate of completion if he takes the entire course (a certificate will not be awarded if he drops in for an hour or so), to be presented at the end of the course.

8. Introductions: Introduce each team member, having them stand up. Tell their job for this week and stress that any questions anybody has may be directed to any team member at any time.

9. Summary: Stress again that the team is in this State to serve; it's goal is to help professional personnel learn as much as possible in the time allotted about MSIS, in order to make MSIS as useful as possible to the State.

Warmup

The purpose of the warmup is to set people at ease before training begins; it is also useful after a heavy lunch, or in a hot room to wake everybody up. The MSIS Training Program shows warmups as a daily, morning event, but the team may prefer another frequency. Caution: Warmups need to be selected prior to the day used!

Warmups are useful even if it appears to the team that most trainees know each other. Why? They may know each other only by name, or only in a working relationship. Warmups help the group feel at ease so it will later be confident enough to ask questions (take a risk), disagree with or challenge a teacher (stand apart from the group), or answer one another's questions (demonstrate so much ownership that they are surrogate teachers).

Types of Warmups

Warmups vary from the simple to complex. Some simple ones are discussed here. See the team copy of Davis and McCallon, Workshops: Planning, conducting, and evaluating, p. 147-149 for more complex warmups.

1. "Who are you?". Have class form triads (three people). Ask each member of the triad to find out four things about another member which will be shared with the entire group as an introduction. Allow 10 minutes for conversation; then reconvene entire group and have everybody introduce one other person.

2. "Who are we?". Variation of no. 1 in which the triad seeks to find commonalities among itself. Obvious commonalities are that they work for one agency, etc. Have the group find at least one non-work commonality (sports, leisure, volunteer groups, church work) which is shared by the three.

3. "Silent puzzle". Have the class break into small groups of five persons sitting together. Give each person a few pieces of a mini-puzzle. Tell them to work together but silently to put together the puzzle. First group done gets a gold star added to the certificate of completion. Permit 10 minutes to perform.

In summary, the purpose of warmups is to help people feel at ease with one another, and therefore willing to take risks, stand out from the group, and enhance psychological ownership of MSIS. Finally, it is just nicer to work together when one feels confortable and in friendly surroundings.

Evaluation

Evaluation is performed in three basic ways in the MSIS Training Program. First, formal evaluation of trainees is accomplished through administering pre- and post-tests for Vols. I-IV. Pre- and post-tests are collected, scored, and recorded for several later analyses which will be reported to OWS. Pre- and post-tests may be found in Part III, Course Content, of this Instructor's Handbook.

Second, informal self-evaluation is performed by trainees using the exercises that accompany Vols. I-IV. Exercises are always followed by question-and-answer sessions so that trainees can discuss correct responses.

Third, the team itself continuously evaluates its performance through several mechanisms:

1. The observer's main responsibility is to analyze the effectiveness of teaching focusing especially on those areas which the teachers have specified.

2. Daily debriefings which cover trainee performance on pre- and post-tests, degree and type of trainee participation, successes, problems, and recommendations. The daily debriefings are written up in the team log.

3. Post-visit debriefings between the project manager and the team, focusing on "how it went" and recommendations for change that should be implemented in all water training.

These devices all comprise what is called "formulative evaluation" in the educational research literature, meaning that the team constantly improves its product and services.

Philosophically, MSIS relies as little as possible on formal tests for evaluation, preferring self-measurement (exercises; questions and answers) and group analysis and improvement (observer; daily debriefings; team log; post-visit debriefing with project manager). The goal is an effective teaching team that works with trainees and among its members to communicate the maximum amount of knowledge about the Model State Information System.

Forms

There are nine forms designed for more-or-less constant use by the SWORCC water teams. They are:

1. Course modifications
2. Daily agenda
3. Water team materials inventory
4. Course roster
5. Pre- and post-test analysis
6. Observer's class analysis
7. MSIS training sign off form--water team
8. Trip summary--water team
9. Water team recommendations

The forms are intended to capture information when it is fresh; we can't rely on memory to clearly delineate events six States and ten weeks ago.

All data on the forms will be used in the two final reports, one covering the history and management of OWS-77-02; the other covering effectiveness of training.

Course Modifications

(Form 1)

State: ______________ Region: ________________ Team: ________________

Course: ________________ ________________________________

Date: ________________ ________________________________

I. Proposed modifications.

Modification Number	Unit	Modification Proposed	Reason

II. Recommendations for permanent modifications.

Modification Number	Reasons and Proof (Cite proof, such as unusually high number of questions; poor post-test scores, etc.)

DAILY AGENDA

(Form 2)

State: ____________ Region: ________________

Course: _________________________________ Date: __________________

EVENT	TIME
Break	
Lunch	
Break	
Wrap-Up	

Water Team Materials Inventory

(Form 3)

State: ___________ Region: _______________ Packer: ________________

Scheduled Date of Departure on trip: ________________ Date packed: ________________

Date of request: ____________

Name of requestor: ________________

I. Materials for teaching Vols. I-IV. (Circle binder; add numbers)

Binder Number	Number Needed	Number Packed	Number Used	Number returned to SWORCC
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				

II. Materials to be left in State

A. Trainees

Binder No.	Number Needed	Number Packed	Number Used	Number returned to SWORCC
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				

B. Materials left with State water contact

Binder No.	Number Needed	Number Packed	Number Used	Number returned to SWORCC
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				
25				
26				

III. Student certificates.

Number Needed	Number Packed	Number Used	Number returned to SWORCC

Course Roster
(Form 4)

State: ____________ Region: ____________ Course: ______________

Date taught: __________________

Name	Agency	Telephone Number

(copy for all trainees; keep master)

Pre- and Post-Test Analysis

(Form 5)

State: ______________ Region: ________________ Course: __________________

Date Course given: ___________________ Observer: ___________________

A. Trainees

1. Number of trainees taking pre-test _________
2. Number of trainees taking post-test _________
3. Useable pairs of tests (basis of following data): _________

B. Trainee Scores.

Trainee ID	Pos. No.	Correct Answer	Pre-test Answer	% Pre-test Correct	Post-test Answer	% Post-test Correct	Net Change

Observer's Class Analysis

(Form 6)

State: ______________ Region: _______________ Date: __________________

Course: ________________________ Observer: ___________________

I. Items requested by Senior or Junior Teacher.

Item	Tally of Occurrences	Implications

II. Communications.

Check the most appropriate point to describe each major event, taken as a whole. Insert events as needed.

Kickoff	○	○	○	○	○
Warmup	○	○	○	○	○
Pre-test	○	○	○	○	○
Unit 1	○	○	○	○	○
Discussions	○	○	○	○	○
Exercises	○	○	○	○	○
Unit 2	○	○	○	○	○
Discussions	○	○	○	○	○
Exercises	○	○	○	○	○
Unit 3	○	○	○	○	○
Discussions	○	○	○	○	○
Exercises	○	○	○	○	○
Post-test	○	○	○	○	○
Course Summary	○	○	○	○	○
	Negative class response (asleep, bored, hostile)	Some class response (some questions, a few listening)	Average class response (most listening, about 1/3 asking questions)	High class response (almost all listening, more than half asking questions)	Constant class response (all listening, asking questions, body alert.)

Additional Notes:

III. Course content.

Fill in the following information about the exercises.

Unit	Exercise Form Number	Time class took to fill out	Questions asked by class (major ones)

IV. Problems noted.

List any content, communications, facilities or other problem that should be brought to the team's attention.

V. Suggestions.

List any suggestions which may aid your team.

MSIS Training Sign Off Form

Water Team

(Form 7)

State: ____________ Region: ____________ Senior Teacher: _________________

I. The following courese, which are checked off, have been completed by the SWORCC water team in this State:

_____Vol. I, MSIS Overview

_____Vol. II, MSIS Subsystems

_____Vol. III, Data Entry

_____Vol. IV, Selection Process

II. The following materials have been turned over to this State by the SWORCC water team

Binder Number	Camera-Ready Copy	1 Duplicate
1		
2		
3		
4		
5		
6		
7		
8		

Slide/Cassette package	1st set*	Camera-ready copy (workbook only)
Vol. I		
Vol. II		
Vol. III		
Vol. IV		

Signed: ______________________________

____
Job Title

____
Agency

____
Date

---

* 1 copy of slides, cassettes and 2 copies each of binders 11-14.

Trip Summary
Water Team

(Form 8)

State: _________ Region: ______________ Team: ______________________

Dates in State: _____________ ______________________

____

I. State Water Contact.

Name: ____________________________

Job Title: ________________________

Agency: __________________________

Telephone: ________________________

II. Trainees.

Course	Total Number Attending	Number reported prior to visit
I		
II		
III		
IV		

III. Pre- and Post-Tests.

Course	Number of useable pairs	Average Net Change
I		
II		
III		
IV		

IV. State checklist.

Of ______ required items in the State Checklist, Section 2.0,

______ were provided upon arrival of the training team.

______ were provided within the first 2 days.

______ were provided after 2 days.

______ were never provided.

V. Successes.

List and briefly discuss not more than 3 high points of this State's Water Division training in MSIS.

VI. Problems.

List and briefly discuss not more than 3 problems.

VII. Other comments.

Water Team Recommendations

(Form 9)

State: ______________ Region: ____________ Team: ____________________

Dates in State: ________________ ______________________________

____

List all recommendations except course modifications (use Form 1) for both water teams to use in remaining States.

Check which categories of recommendations are covered below:

_____ State Checklist

_____ Materials taken to State

_____ Course content

_____ Part II--Team procedures

_____ SWORCC support

_____ UC support

_____ Other: ______________________

_____ Other: ______________________

MODEL STATE INFORMATION SYSTEM

PART III

COURSE CONTENT

FOR

SELECTION PROCESS

INTRODUCTION:

The purpose of Part III of the handbook is to provide the instructor with everything needed to conduct the training.

Before plunging into the details about what will be taught, two definitions are necessary.

Course: The teaching content within individual MSIS Training Program volumes

Unit: A section within the course: Units are logical groups of information divided into manageable periods of time.

For this course, Selection Process, there are two required units and one optional unit.

Part III begins with course information. Purpose, summary of course content, and checklist of materials needed are covered.

Next come several sets of information about the two required units. The units are self-contained and complete unto themselves, facilitating variable length breaks between units, change in instructors, and ad hoc modifications. Unit information includes:

1. Goals

2. Behavioral objectives and self-measurement techniques

3. The sequence of events, which gives a snapshot of all unit activities

4. Detailed sequence of events: It painstakingly lists in double-page format each teaching topic; methods to teach it; specific slides, charts, etc. needed; and detailed instructor notes that explain the topic's contents. The detailed sequence of events was designed with space between events to allow for changes to be inserted as notes. Such additional material that cannot be inserted within the framework of a unit may be included as the instructor sees fit in the additional unit, Optional Material.

It is expected that, with repeated use, this material will be tailored to the individual style of the instructor and the needs of the particular population undergoing training. It is assumed that, as the instructor becomes more familiar with teaching this course, he will rely mainly on the detailed sequence of events to orchestrate his efforts.

The applicability of this course to each State will depend upon the specific MSIS subsystems selected by that State. It is important, therefore, for the trainer to know beforehand what subsystems were not selected and will not be used by the State so that in the presentation references to those subsystems can be eliminated or at least minimized.

It is important to note, though, that although references to the subsystems not selected should be minimized, it must be made clear that the Variances and Exemptions and Enforcement Actions subsystems do contain a portion of the information required to be reported when dealing with federal reporting requirements. If either or both of those subsystems have not been selected, the information that would normally be reported by that (those) subsystem(s) will have to be prepared manually.

PURPOSE:

The purpose of this course is to attain two types of trainee goals, content and non-content. The content goals are knowledge acquisition and skill attainment. The non-content goal is attitude. The four specific goals for this course are:

Knowledge:

Trainees will know the methods to use in specifying what output reports are needed.

Trainees will understand the consequences of using options offered by the MSIS selection process.

Skill:

Trainees will be able to complete the forms needed to operate the MSIS selection process.

Attitude:

Trainees will be confident in their basic knowledge of the MSIS selection process and their ability to use it.

SUMMARY OF COURSE CONTENT

Following are the units that comprise this course together with the goals, behavioral objectives, time allocation, and instructional techniques for each unit:

Unit 1: Processing Options

Goal: To provide the trainee with an understanding of the selection process and some practical ability in completing the processing option input forms to produce the desired results.

Behavioral Objectives:

1. Identify the specific purpose of the entries on given PROC, SORT, SEL1 and SEL2 input forms.
2. Choose the best valid entry for each field on the PROC, SORT, SEL1 and SEL2 input forms.
3. Complete specified PROC, SORT, SEL1 and SEL2 input forms.
4. Name the four types of conditions that can be specified on SEL1 and SEL2.
5. Name at least two of the five criteria used by the Sanitary Survey subsystem.
6. Explain the three main purposes of the Water Quality Compliance scheduling input form.
7. Complete the sanitary survey and water quality compliance scheduling input forms.

Time Allotted: Seven hours

Unit 2: Workshop

Goal: To strengthen the trainee's understanding of the consequences of the selection process.

Behavioral Objectives:

1. Compare selection inputs with the results.
2. Identify errors on specified input forms.
3. Correct errors on specified input forms.

Time Allotted: Two hours

LIST OF MATERIALS NEEDED FOR COURSE

Instructor Materials Required:	Unit 1	Unit 2	Unit 3	Unit 4
Instructor's Handbook (Vol. IV)				
35mm slides/notes				
35mm slide projector				
Newsprint and stand				
Felt marker (large)				
Handouts				
Exercise forms				
Discussion questions				
Pre and post evaluation forms				

Participant Materials Required:	Unit 1	Unit 2	Unit 3	Unit 4
Participant Handbook (Vol. IV)				
Pencils				
Note Paper				

UNIT 1: PROCESSING OPTIONS

Goal:

To provide the trainee with an understanding of the selection process and some practical ability in completing the processing option input forms to produce the desired results.

Behavioral Objectives:

1. Identify the specific purpose of the entries on given PROC, SORT, SEL1 and SEL2 input forms.
    a. Condition: Given a form
    b. Accuracy: 100%
    c. Method: Written exercise
2. Choose the best valid entry for each field on the PROC, SORT, SEL1 and SEL2 input forms.
    a. Condition: Given a form
    b. Accuracy: 100%
    c. Method: Written exercise
3. Complete specified PROC, SORT, SEL1 and SEL2 input forms.
    a. Condition: Given problems
    b. Accuracy: 90%
    c. Method: Workshop
4. Name the four types of conditions that can be specified on SEL1 and SEL2.
    a. Condition: From recall
    b. Accuracy: 75%
    c. Method: Written exercise
5. Name at least two of the five criteria used by the Sanitary Survey subsystem.
    a. Condition: From recall
    b. Accuracy: 100%
    c. Method: Written exercise
6. Explain the three main purposes of the Water Quality Compliance scheduling input form.
    a. Condition: From recall
    b. Accuracy: 100%
    c. Method: Written exercise
7. Complete the sanitary survey and water quality compliance scheduling input forms.
    a. Condition: Given a problem
    b. Accuracy: 90%
    c. Method: Workshop

SEQUENCE OF EVENTS: VOLUME IV, UNIT 1

TIME	ACTIVITY
25	Warm-up
15	Pre-Test
15	Introduction of Unit
25	Slides/lecture: PROC Input Forms
20	Study Problems
15	Error Messages
20	Slides/lecture: SORT Input Forms
10	Discussion
25	Exercises
20	Slides/lecture: SEL1 and SEL2 Input Forms
60	Study Problems
15	Discussion
60	Workshop: PROC, SORT, SEL1 and SEL2
20	Exercises
60	Workshop: Scheduling Input Forms
15	Summary

Total Time: 7 hours

DETAILED SEQUENCE OF EVENTS

VOLUME IV, UNIT 1

The Detailed Sequence of Events is presented in double-page format in order to provide the instructor with an instant view of what is to be taught, how, and in what sequence. The column headings used are:

Event Number - The numbers under this heading represent the main unit activities and the sequence in which they should be presented.

Time - The numbers represent the planned duration of the event in minutes. These times have been tested and can be used to estimate the level of detail intended for the event.

Support Form Number - Identification symbols of the materials to be used in conjunction with the presentation. These symbols also appear on the reproductions of the material inserted at the end of the unit. From left to right the digits represent the volume, the unit, the type of media, and the sequence of that media within the unit. For example, I1A3 means Volume I, Unit 1, Answer sheet number 3. The media abbreviations are defined as follows:

A - Answer sheet

C - Chart on newsprint

E - Exercise handout

H - Information handout

S - Slide

T - Test

Event & Method - Recommended content and teaching approach. See Part II of this volume for additional suggestions.

Instructor Notes - (1) Refers instructor to more detailed material in Part IV, Extracts from MSIS Documents; and (2) presents information which should either be taught or known in order to answer questions. All the material in the Instructor Notes must be mastered prior to teaching this course to feel confident during teaching.

NOTES

Volume IV, Unit 1

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
1	25	IV.1.C1	Warm-up

Instructor Notes

For detailed discussion of warm-up and kickoff activities, see Part II.

The intent of these activities is to state clearly what's to be done today, why, and how long it will take. The MSIS training philosophy of aiding States to use MSIS will be emphasized, along with the team's commitment to answering all questions that may arise.

Before class begins, put today's agenda on newsprint, using this example:

Today's Agenda	Date	Time
Warm-up		
Pre-Test		
Unit 1		
Break		
Unit 1, con't		
Lunch		
Unit 2		
Break		
Unit 2, con't		
Post-Test		
Student Certificates		

Volume IV, Unit 1

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
2	15	IV.1.T1	Pre-Test
3	15	IV.T1L IV.1.S1 IV.1.S3	Slides & lecture: Introduction to Unit . 1 goal . 7 behavioral objectives . Exercises . Workshops . Agenda: 1) PROCs 2) SORTs 3) SEL1 and SEL2s 4) Study problems

Instructor Notes

Pass out pre-test for Selection Process; collect pre-test.

See p. 46 for goal and behavioral objectives.

Exercise sheets will be passed out during the unit; they are for trainee use, and will not be graded or collected. Urge the trainees to keep them, as answers will be discussed and may be useful for further reference.

Agenda:

1. There are five types of processing option input forms; we will deal in detail with the use of four of them. The fifth, RESTART is used by data processing personnel to restart a program which stops in the middle of a run.

2. The four processing option input forms covered in this course are PROC, SORT, SEL1 and SEL2. As was pointed out in Vol. III, Data Entry, PROC and SORT may be used in conjunction with other input forms, but SEL1 and SEL2 must be used together, never separately.

3. This unit uses study problems which move from the simpler to more complex uses of the processing option input forms; teachers must permit as much time as is needed by the trainees to work through these problems. Study problems are interspersed throughout the unit.

Volume IV, Unit 1

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
4	25	IV.1.S3	Slides and lecture:
		IV.1.S10	PROC input forms
			. Purposes
			. Total number is 27
			. Eight covered
			. REGS.100
			. FEDR.100

Instructor Notes

Purpose

The 'primary' purpose of the PROC form is to initiate a program run. The PROC form allows the user to mechanize his first decision; that is, to run MSIS. This form also specifies the subsystem to be run, the specific program within the subsystem, and whether or not a report is desired. If a report is desired, the PROC form may specify the type, date and period of the report.

How Many

There are about 27 PROC forms. Each subsystem uses at least one. We will cover eight representative PROC forms here, moving from the simpler to the more complex.

REGS.100

Our first PROC form is the REGS.100 shown in the slide. It will be utilized by the State at an early date since it performs the function of creating the REGS File. This is the only PROC Input Form used by the REGS subsystem. It precedes the REGS Table Creation Forms required to install federal and any State regulations. It specifies the date of the file's creation and of the subsequent input report.

The two fields shown here are the four position card ID which spells out PROC and the standard six position date. The month, day, and year each require two positions. Zeros are used as necessary.

Note that the user can choose to create a special file of error records. This example has a special file of error records. This example has the "N" entry, indicating no file creation is desired. In line 2, there is a "Y" to specify a print-out of the data element fields in error.

Recall that file creation probably means that MSIS would output the information on magnetic tape, not on a user-readable printed listing.

FEDR.100

The FEDR.100 PROC form shown here is the only input form used by the FEDR subsystem. It contains the date and period covered in the report. The report is a magnetic tape whose contents fulfill three of the four federal reporting requirements handled by MSIS.

Volume IV, Unit 1

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
4, con't			Slides and lecture: PROC input forms . MSIS.100 . WAQC.130

Instructor Notes

The two fields shown on the second data entry line specify the period to be covered by the report. In both fields the common six-digit entry is used. These particular entries show how the first report for the federal government might be generated, covering the 1977 fiscal year.

Since the federal government will be receiving reports from many States, the field shown here specifies the State identification (ID) for federal reporting. This example is "OH" for Ohio.

MSIS.100

MSIS.100 is a PROC form used by the Standard Processing subsystem to purge the Standard History File, or SHF. It is occasionally necessary to purge large files of unneeded records to prevent their becoming unwieldy and expensive to manipulate.

The field in positions 14-19 specifies the purge date for file entries; that is, all dates earlier than the date shown are no longer considered required and will be purged from the system.

The field in the second line, position 20, again allows the user a processing option. Here, the choice is between entering a 1, as in this example, which instructs the computer to print all the purged records, or by entering a 2, which tells the computer not to produce a report. It is usually a good idea to print out the purged records on a report in case they are required for further reference.

Remember MSIS keeps records and the regulations specify how long. The date of 1/1/84 was chosen because it represents a reasonable estimation of when the SHF might first be purged.

WAQC.130

The WAQC.130 performs the same general function as the previous example. In this instance, it is input to the WAQC subsystem to purge all records in specified contaminant groups from the SAF, if the records are older than the specified date.

Notice that the information in the second column, contaminant group, is pre-printed. The user then may choose to enter a purge date against any or all of the five contaminant groups pre-printed here. In our example, purge dates are entered for the "0" which is turbidity and the "3" which is the microbiological contaminant group. All codes for the contaminant groups are listed in the Data Element Dictionary.

Finally, notice the report option in the lower right-hand corner. A "Y" entry, as this example shows, instructs the computer to print a report listing all purged records.

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
4, con't			Slides and lecture: PROC input forms . PWSI.103 . PWSI.111 . PWSI.113

Instructor Notes

PWSI.103

The PWSI.103 is used to purge records from the Public History File. Recall that the State's PWS Inventory is maintained on the Public Water File and that the file is so large that it has its own history file, the PHF. Do not confuse fields 2 and 3, which are both headed by the word, "Date". The third field contains the purge date.

PWSI.111

Note that the more complex PWSI.111 PROC form contains both standard error processing options and several new report options which apply to PWS records on the PWF.

Look at the key which explains the codes usable in the four options. The 1 and 3 codes are the familiar instructions to the computer to produce or not to produce a report. The second option, identified with a 2, would only be applicable to turn-around documents. Now let's look again at the report options.

Note that for the report options at positions 15 and 16, the user cannot select option 1, which is "No Report". The MSIS was programmed to always supply the user with reports of incomplete PWS records and status requests. Note also, that all four of the report options may be coded as a 2 for the pre-printed status and entry form (turn-around document).

PWSI.113

PWSI.113 allows the user to tell the computer which of the listed report-producing programs should output a report. The four programs are always run together. More than one report may be selected. This example has specified that a State Discretionary Data Report be printed.

Recall that a State Discretionary Data Report contains the special requirements set up by the State for a particular PWS as authorized by the regulations. Such things as special monitoring for radiological contaminants and variance and exemption data are included.

The numbers to the left of the data entry positions identify the PWSI program which can produce a report. The first three positions are the routine Y = yes for report, N = no report, while the fourth position again provides the turn-around document option selected here by entering a "2". Descriptions of each report may be found in the User's Manual.

Volume IV, Unit 1

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
5	20	IV.1.S11	Study problem on PROCS . SRVY.100

Instructor Notes

SRVY.100 Problem: Request MSIS on 6/23/77 to generate two schedules for sanitary survey for the rest of the year 1) based on a weight of .9 for the population served by the PWS and a weight of .1 on the type of source water, and 2) based solely on the population served by the PWS.

Here is a problem concerning a complex PROC. SRVY creates the sanitary survey schedule using the information contained on this SRVY.100.

Since the selection criteria have been predetermined, SEL1 and SEL2 are not required. A SORT form may be used in some instances but is not always required.

As a result of this consolidation, some special entries are required on this PROC form which make it more complex than those we have encountered so far.

The titles over the selection weights blocks represent the pre-specified criteria used by the computer to automatically select PWSs for a sanitary survey. The entries in the blocks are weights established by the State to assign their relative priority to each area. The higher the numerical number entered, the higher the State priority on that particular item. Any entry may range from 0.0 to 1.0, but the total of all five entries must equal 1.0.

Positions 21 and 22 allow the user to choose, or not, the output of a priority and a schedule report respectively. A priority report is sorted. If a "Y" is entered here, a SORT form is required. A schedule report is in the sequence determined by the computer, and therefore, is not sorted. In this example, we have selected both reports with "Y" entries. Although this is possible, normally the priority report would be produced for examination of the priority results before producing the final approved schedule report.

Position 23 is completed for the priority option. It may be completed with a 1 for all PWSs, a 2 for specific regions and/or districts, and a 3 for equal distribution among all regions. These are specified in the Data Entry Instructions.

Positions 24 through 27 indicate the report limit. In this position the State can specify a certain number of PWSs it would like reported because it knows how many sanitary surveys it can perform. If left blank, the report will be unlimited, and will schedule all PWSs using the weighting criteria. The example is blank because priority option 1 for all PWSs was

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
5, con't			Study problem on PROCS
			. SRVY.100, con't
			. SRVY.101

selected.

Note that each field contains two positions, but that in all cases two fields are joined. Invariably, the first two-position field will be the region, and the second two-position field will be the district. At least one region entry must be made if priority option 2 was selected and no entry may be made if priority option 2 was not selected. In this example, priority option 2 was not selected so these fields must be left blank.

These two fields indicate the period that the schedule will cover. The first field is for the **beginning** date; the second field, for the ending date.

There is provision here for a one-digit entry in position 60. The key is shown to the right for the PWS report option. As indicated, the 1 is "Do not produce a report", the 2, "Produce a report on the pre-printed status and entry form" (turn-around document); and the 3, "Produce a comprehensive report". These options only apply to the schedule report (position 22) and an entry should be made if that option is "Y". The 3 entry here will produce a **schedule** report.

SRVY.101

Note that the SRVY.101 SORT form is only used when the priority report option of SRVY.100, position 21, contains a "Y" and the priority option selected is "1" or "2". Otherwise this single PROC form, SRVY.100 is the only input form required to produce the Sanitary Survey Report. Since we have a "Y" in position 21 and a "1" in position 23, a SORT form could be submitted. If it is not included, the program will run and sort the report in the sequence generated by the weights.

Volume IV, Unit 1

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
6	15	IV.1.S12	Error messages . Three general categories of error messages: --Data entry --Processing option (PROC) --Standard Warning . PROC error messages

Instructor Notes

Error messages

In MSIS, there are three general categories of error messages.

1. Data entry error messages are contained on the Error Message Table; they are output in Data Entry Error Reports; they are always preceded by either the word, "Warning", "Invalid", or "Reject"; and do not stop the program run.

2. Processing option errors do stop the program run and result in the Standard Error Report. As we discuss the PROC, SORT, and SEL forms, we will look at the possible error messages for each.

3. When an EPA required field is omitted, a warning message is generated on the third type of error report, the Standard Warning Report.

PROC error messages (second category)

The purpose of all PROC Error Messages is to advise the computer operator that a problem occurred which must be corrected before the run can be made. They are:

- Two PROC Records Supplied
- No Processing Option cards were provided
- PROC type not SEL1, SEL2, SORT, or PROC
- PROC card contains an invalid date

Two PROCs indicate confusion or a mix-up; therefore, the run stops.

If no PROC is present, a mistake has been made and again the run stops.

If a non-"Processing Option" input form was used, a mistake has been made and the run stops.

An invalid date indicates an error; therefore, the run stops.

Volume IV, Unit 1

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
7	20	IV.T2L IV.1.S12 IV.1.S14	Slides and lecture: SORT input forms . Purpose . Limitations . Few variables . Total number is 6

Instructor Notes

Purpose

Our second type of Processing Options form is the SORT form. As previously mentioned, the PROC forms mechanize the user's decision to run the computer and determine what subsystem will be run, what programs within that subsystem will be run, and whether or not a report will be produced.

SORT forms indicate the data elements to be used in sorting, specify the sorting sequence, the sequence of their use, and indicate either an ascending or descending sorting order.

Limitations

MSIS has two sort limitations. First, only the first 15 positions of any single field are used in a sort. Second, the total of all of the positions of all of the fields specified may not exceed 30 positions. The Data Element Dictionary must be consulted to determine the length of the data elements to be used.

Variables and number

The six SORT forms used by MSIS are quite similar. The only variables are the subsystem name, the form ID, and the program ID. Only the REGS and FEDR subsystems do not use the SORT form, since, in both instances, their file contents cannot be rearranged in an output report. Consult the User's Manual for the specific use in any particular program.

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
7, con't			Slides and lecture: SORT input forms, con't . PWSI.100 . Error messages

Instructor Notes

PWSI.100

Look at PWSI.100. Under the heading, "Sort Sequence", we see five entries, the maximum number that can be entered with any one SORT form. However, two SORT forms may be used in one program. We notice that the sort sequence is numerical, consecutive, and ascending, a mandatory format for the SORT form.

The mnemonic name of the data element to be sorted in each of the sequences previously entered must be given. The correct name as well as the size of the field is obtained from the Data Element Dictionary. Recall that the total number of positions in the sort cannot exceed 30. The fields shown in this example add up to exactly 30 positions: plant type 1, cycle 2, storage 10, production 10, and ID 7. Also, since no field exceeds 15 positions, no sorting problem will occur.

SORT error messages

Here is the list of SORT errors:

- Maximum Sort--Key size has been exceeded
- Sort Sequence field not numeric
- Two sort fields have the same sequence number
- Sort sequence number greater than 10
- Sort Option mnemonic name is invalid
- Sort mode is not ascending or descending
- Non-consecutive sort sequence values

Note that all SORT errors stop the run.

Volume IV, Unit 1

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
8	10		Discussion
9	25	IV.I.E1 IV.I.A1	Exercises

Instructor Notes

Answer questions; discuss all points raised by class.

Give 10 minutes to fill out sheets, then discuss correct answers.

Volume IV, Unit 1

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
10	20	IV.1.S14 IV.1.S15	Slides and lecture: SEL1 and SEL2 input forms . Purpose . Three logic combinations --SIMPLE --AND --OR . Limitations

Instructor Notes

Purpose

The purpose of SEL1 and SEL2 is to select records, a complex process.

It should be noted that SEL1 and SEL2 are both required for record selection. Neither is complete without the other.

Logic Combinations in MSIS

There are three logic selection conditions which are expressed with SEL1 and SEL2: the SIMPLE, the AND, and the OR conditional statements. Combinations of each may also be used.

In the SIMPLE condition, only one conditional statement is specified. Only one SEL1 and one SEL2 are required.

Selection with the AND condition means the record will be selected if, and only if, it meets both conditions, that is, condition one and condition two. In completing SEL2 for the AND condition, two entries are made on the same form.

Selections with the OR conditional statement mean the record will be selected if it meets either condition specified, that is, condtion one or condition two. The OR condition requires two SEL2 forms for each OR statement.

Limitations

The total number of conditions that may be input to any selection program is limited to 35. That means that the number of SEL1 forms for one run may not exceed 3 and the Logic ID No. field will never be greater than 35. This limitation is also reflected on SEL2 in that only 35 Logic ID numbers are printed on the form.

Similarly the number of OR conditional statements is limited to 35, that is, no more than 35 SEL2 forms representing the OR conditional statments may be input to one selection run.

Event No.	Time (In min.)	Support Form No.	Event & Method
10, con't			Slides and lecture: SEL1 and SEL2 input forms, con't . MSIS.106 . MSIS.107

Instructor Notes

MSIS.106

MSIS.106 is a SEL1 input form for the Standard History File. The mnemonic name of the data element to be compared for selection is entered; and the value of the data element to be compared against MSIS files is entered.

The data element logic ID number is vital since this is the link that connects the SEL1 to SEL2.

MSIS.107

MSIS.107, a SEL2, consists of pre-printed data element logic ID's and their associated relation symbols.

The first field contains the pre-printed data element logic ID number. In this example it is "01". This number corresponds exactly to the data element logic ID number of "01" that was assigned to a line on SEL1.

The second field on this SEL2 is then used to enter the desired relation between the value of the specified data element of any one record and the value specified for comparison on SEL1. One of the following six entries is permissible:

Less than
Equal
Greater than
Not less than
Not greater than
Not exists (empty)

Volume IV, Unit 1

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
10, con't			Slides and lecture: SEL1 and SEL2 input forms, con't . Error messages

SEL error messages

Errors in SEL1 and SEL2 input forms stop the run.

The error messages for the SEL1 input forms are:

- Invalid file ID in SEL1 Record
- Two SEL1 records have the same logic ID
- Mnemonic name in SEL1 record is invalid
- SEL1 value too long for specified mnemonic
- No SEL1 option card was provided
- Logic ID greater than 35 in SEL1 record
- SEL1 update-date value is not a valid date
- SEL1 record-ID value not numeric
- SEL1 catalog-number value not numeric

Here are the SEL2 error messages:

- SEL2 operand has no matching SEL1 record
- No SEL2 option card was provided
- More than 35 SEL2 records were provided
- SEL2 record has invalid rational symbol

Volume IV, Unit 1

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
11	60	IV.1.S14 IV.1.S38	Study problems on SEL1 and SEL2 1. VEF problem: --MSIS.105 --MSIS.108

Instructor Notes

VEF problem

Here is the first study problem for SEL1 and SEL2:

1. Request a report of all changes to the Variances and Exemptions File (VEF) be produced on 1/2/78.
2. Sort the information by the most current change.
3. If more than one change was recorded on the same day, sort by the previous update date.

You can think immediately of the three steps in the decision-making process. That is, use a PROC form to initiate a run, a SORT form to order the information, and the SEL forms to select the records. Now let's look in detail at that process.

MSIS.105

The history records for the VAEX subsystem contain all changes made to the VEF. These records are maintained by MSIS on the Standard History File. Therefore, we use the MSIS.105 PROC form to (1) initiate the program run to generate the SHF report needed and (2) provide the date for the report. In this example it is January 2, 1978.

MSIS.108

The MSIS.108 SORT form is required to position and order information on the SHF report. Two entries are required since two sorts are needed.

The Data Element Dictionary shows two dates on the SHF: SH-CUR-UP and SH-LST-UP. Since there is some question as to which date is the most recent change, we look in the DED for a description of the two dates.

We find that SH-CUR-UP is the date of the most recent change and that SH-LST-UP is the previous date of change. Therefore, the first sort sequence "01" is SH-CUR-UP in a descending mode. The second sequence, "02", is then the SH-LST-UP in a descending mode. This information will be a subset of the first sort.

Event No.	Time (In min.)	Support Form No.	Event & Method
11, con't			Study problems on SEL1 and SEL2 1. VEF problem, con't --MSIS.106 --MSIS.107 --SIMPLE condition --Summary

MSIS.106

Next, we use MSIS.106 to select history records from the VEF, since the SHF contains history records not only from the VEF, but also from the EAF, VIF and OMF. The DED shows that SH-FILE-ID specifies the file that the history record is from; therefore, we enter SH-FILE-ID. Since the File ID we want (or comparison value) is the Variances and Exemptions File, a VE is entered.

MSIS.107

Since only one comparison was specified, our condition logic is the SIMPLE condition. Thus, we would expect the accompanying MSIS.107 SEL2 form to show a single entry. The relation "EQ" for equal is assigned against the matching SEL1 "01" logic ID number. Therefore, the computer will select all records on the SHF that contain VE data.

Summarize this first problem and its solution.

Volume IV, Unit 1

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
11, con't		IV.T3L	Study problems on SEL1 and SEL2 2. Condensed report problem --AND condition --VAEX.104 --VAEX.103

Instructor Notes

Condensed report problem

The second study problem represents the AND logic condition.

1. Request a condensed report of variances and exemptions that were in effect during **the entire year of 1977**.
2. This report should be generated on January 2, 1978.
3. It should be sorted by variance and exemption ID, ascending, **within variance or exemption type (V or E), descending, within ascending PWS-ID.**

VAEX.104

The PROC form, VAEX.104, initiates the program run and specifies the current date which will be printed on the requested report. In this instance, we have two report options. We choose the condensed report and refuse the case history since it wasn't requested.

VAEX.103

The first line of data entry on VAEX.103 will sort the selected records by PWS ID and list them in an ascending order. The second sort will group the variances and exemptions granted to a particular PWS and will, as a result, list them in descending order, putting variances first and exemptions second. The third sort will look at the variances and exemptions for a PWS and sort them by the variance or exemption ID in an ascending order.

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
11, con't			Study problems on SEL1 and SEL2 2. Condensed report problem, con't --VAEX.105

Instructor Notes

VAEX.105

Using VAEX.105, the SEL1, we know we want to specify the selection of all variances and exemptions in effect during the year of 1977.

Here's one way to do it. One condition for selection of a variance or exemption in effect during 1977 would be if its expiration date was greater than the last day of 1976. We use the Data Element Dictionary to find an expiration date on the file called VE-EXP-DT. Therefore, the first line of data entry is the data element for variances and exemptions expiring, VE-EXP-DT, and the corresponding comparative value is 12-31-76.

If we select all variances and exemptions whose expiration date is later than 12-31-76, will we get all variances and exemptions in effect during 1977?

The answer to that question is "yes"; however, that's not all we will get. Suppose there are either variances or exemptions on file with an effective date in 1978. Since their expiration date is after 12-31-77, they satisfy our first condition. However, they were not in effect during 1977 and must be excluded. To do this we must specify a second condition.

So, we consult the DED for an effective date and find one under the name VE-EFF-DT. This becomes our second condition for record selection. On the second data line we enter the data element effective date, VE-EFF-DT, and the corresponding comparison value of 01-01-78.

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
11, con't			Study problems SEL1 and SEL2 2. Condensed report problem, con't --VAEX.106 --Summary

Instructor Notes

VAEX.106

Remember, in stating the first condition on SEL1 we said the variance or exemption expiration must be greater than 12-31-76 for the variance or exemption to be in effect during the year of 1977. The relation symbol for the first logic ID is shown as "GT" for greater than.

For the second condition, we said the effective date of the variance or exemption had to be before 01-01-78. Thus, the relation symbol for the second logic ID is shown as "LT" for less than.

The AND condition requires that a record must satisfy both conditions to be selected. By using one SEL2 and entering both relation symbols, we have correctly represented the AND logic condition. Notice that the use of one condition selects a subset of the whole file. Use of the AND condition makes it more difficult for a record to be selected and therefore the resulting selected group is a subset of the first subset.

Summarize the second problem and its solution.

Event No.	Time (In min.)	Support Form No.	Event & Method
11, con't			Study problems on SEL1 and SEL2 3. ENAC case histories --OR condition --ENAC.105 --ENAC.106

Instructor Notes

ENAC case histories

Now let's look at the third study problem, which uses the OR logic condition.

1. Generate enforcement action case histories for those actions whose legal status is either "not a legal action" or "initial action pending".
2. Arrange the report in ascending order by the PWS involved.

This problem satisfies the OR logic condition since we want those whose:

1. Legal status is "not a legal action", OR
2. Legal status is "initial action pending."

ENAC.105 and ENAC.106

The correct PROC is ENAC.105. Again, we input the current date, and we specify the case history report.

As expected, ENAC.106 SORT contains one entry since we want only the EAF. There is one sort sequence; the data element to be sorted on is the PWS ID. The mode is ascending.

Volume IV, Unit 1

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
11, con't			Study problems on SEL1 and SEL2 3. ENAC case histories, con't --ENAC.107 --Two ENAC.108s required --Summary

Instructor Notes

ENAC.107

In this SEL1, ENAC.107, the data element mnemonic name again comes from the record layout of the EAF. ENAC.107 contains two entries since two data element comparative values are required for the OR logic condition. The legal status of "L" was found in the Code Value Table and means "not a legal action." "I" is the code for "initial action pending."

Note that in the first field of each of the two lines of data entry the data element mnemonic name is identical. In each instance it is the legal status. The distinction we want to make is the comparison value within that legal status. As a consequence, we enter the comparison values of "L" and "I" in the second field of each respective line of data entry.

Don't forget the data element logic ID! It's a required entry and if omitted will produce an error message.

Two ENAC.108s

Look at SEL2, ENAC.108. We know that an OR condition was used for the selection. Therefore, two SEL2 forms are required with one relation symbol entry on each form.

Here is the first SEL2. For the first data element logic ID whose comparative value on SEL1 was "L", a relationship of equal is specified since we want those with legal status of "L".

The relation symbol of equal is shown here for the second logic ID entered on SEL2, which was the comparative value of "I". Remember, the "I" comparative value must be associated with the logic ID number specified on SEL1, or 02.

Consider what would happen if we had made both entries on one SEL2. The conditional statement would have been legal status equal to L and I. Since an enforcement action can have only one legal status, none of the records on the file would have met both criteria. As a consequence, we would get a blank report.

Summarize this problem.

Volume IV, Unit 1

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
11, con't			Study problems on SEL1 and SEL2
			4. Create mailing labels
			--Both AND and OR conditions
			--OPER.102
			--OPER.103
			--OPER.104

Instructor Notes

Create mailing labels

Our last problem is to create one mailing label for each PWS operator whose certification in class "0" or "6" will expire before July 1, 1978. This problem contains both AND and OR conditions.

OPER.102

OPER.102 PROC form not only enters the date but also allows for options.

Our only requirement within the options indicated is to produce mailing labels. Therefore, a "Y" for yes is entered in position 16, and in position 17 a 1 to produce one label for each record selected.

OPER.103

One sorting sequence requires one entry on the SORT form, OPER.103. OM-ADS-ZIP is the data element mnemonic name from the OMF record layout for zip code. Since no other SORT criterion is specified, any two selected OMF records with the same zip code will be sorted in the sequence of the file; that is, OM-ID. Printing in zip code sequence usually aids the post office in processing MSIS mailings.

OPER.104

Three conditions were specified in the problem: (1) PWS operators with a class "0" certification, (2) PWS operators with a class "6" certification, and (3) PWS operators whose certification would expire before July 1, 1978.

On OPER.104, the first and third lines of data entry specify the operator class, with the corresponding data element comparative value of 0 and 6.

The second line of data entry is for the renewal date of the operator license. The required comparative value is July 1, 1978. The sequence of the entries on this SEL1 does not matter as long as the correct relation symbol is specified on the appropriate SEL2's.

How are the conditions related? Well, to be selected a record must contain a certified operator in class "0" AND one whose certificate renewal date is less than July 1, 1978, OR a certified operator in class "6" AND whose certificate renewal date is less than July 1, 1978.

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
11, con't			Study problems on SEL1 and SEL2 4. Create mailing labels, con't --two OPER.105s required --Summary

Instructor Notes

Two OPER.105s

Look at the first SEL1, OPER.105. The "01" logic ID on SEL1 was for the class "0" operator and the relation symbol here must be equal in order to select those records.

The second data element was the certificate renewal date. Since we are looking for those certificates whose renewal dates are less than July 1, 1978, our relation symbol for the second logic ID must be LT. That concludes the AND condition, which we are able to specify on a single SEL2.

However, there is also an OR condition, since we must also select operators whose certification is class "6" and whose certificate renewal date is less than July 1, 1978. We need another SEL2.

By using a second SEL2, a record will be selected if either the first or the second pair of conditions is met. In this case the certificate renewal date is also less than July 1, 1978. So, we find the relation symbol shown here as LT, for the "02" data element.

This SEL2 must also satisfy the AND logic, and the operator class must equal "6". To select those records, our relation symbol must be EQ for the "03" data element.

Summarize the problem and its requirement for two SEL2s.

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
12	15		Discussion
13	60		Workshop PROC, SORT, SEL1, SEL2
14	20	IV.1.E2 IV.1.A2	Exercises
15	60		Workshop Water Quality and Sanitary Survey Scheduling Input Forms
16	15		Summary

Instructor Notes

Discuss all questions raised by class.

Have the trainees practice completing PROC, SORT, SEL1 and SEL2 combinations resulting from problems. Answer all questions.

Allow 10 minutes for trainees to fill out exercise sheets, then discuss the correct answers for the remainder of the time.

Discuss the input forms for scheduling field by field in small groups. Have the trainees practice completing the input forms. Answer all questions.

Summarize, including these points:

1. Sequence of using processing option input forms is PROC, SORT, SEL1, and SEL2.
2. Three categories of error messages in MSIS and consequences.
3. SIMPLE, AND, and OR logic conditions.

Unit 2: WORKSHOP ON SELECTION PROCESS

Goal:

To strengthen the trainee's understanding of the consequences of the selection process.

Behavioral Objectives:

1. Compare selection inputs with the results.
    a. Condition: Given corresponding input forms and reports
    b. Accuracy: 90%
    c. Method: Workshop
2. Identify errors on specified input forms.
    a. Condition: Given input and error messages
    b. Accuracy: 80%
    c. Method: Workshop
3. Correct errors on specified input forms
    a. Condition: Given identified errors
    b. Accuracy: 90%
    c. Method: Workshop

SEQUENCE OF EVENTS: VOLUME IV, UNIT 2

TIME	ACTIVITY
15	Introduction of Unit
70	Workshop on Selection Process
15	Summary
15	Post-Test
5	Student Certificates
Total Time: 2 hours	

Volume IV, Unit 2

Detailed Sequence of Events

Event No.	Time (In min.)	Support Form No.	Event & Method
1	15		Introduction to Unit . Goal . Behavioral objectives . Agenda
2			Workshop on selection process inputs and results

If no optional unit, proceed to event 3

Event No.	Time (In min.)	Support Form No.	Event & Method
3	15		Summary
4	15	IV.2.T1	Post-Test
5	5		Student Certificates

Instructor Notes

See the goals and behavioral objectives on p. 98 .

The agenda for this unit is a workshop correlating selection process input forms with resulting reports. It is up to the instructor to structure this workshop. The purpose of the workshop is to provide trainees with practical experience in the results of both correct and incorrect entries on input forms.

If COMNET is available for training purposes, the input results should be the result of actual test data run against the COMNET test data base. If it is not possible to use COMNET, then the instructor must have provided a small manual test data base which trainees use to fill out forms and which is also used in the standard output reports used for this training.

It is critical that all trainee questions about selection process input forms they filled out and the consequences of their data entry be answered.

Summarize major points of this unit.

Hand out post-tests; collect when all trainees have filled them out.

During the lunch break, have completed student certificates with student name clearly printed, and signed by the Senior Teacher with today's date. Call each person by name and either call them to the front of the room, or give out directly to each. DO NOT PASS THEM OUT IN A GROUP; give to each individual.

UNIT 3: OPTIONAL MATERIAL

(To be inserted as required).

41B1
(1-4)

MSIS BACKGROUND INFORMATION

Name: ______________________ (5) (30) Postal Code: ____ (31-32) Date: / / / / / Month Day Year (33-38)

1. Circle which MSIS training courses you have already taken:

   (39) a. None. Go to question 2.

   (40) b. MSIS Overview

   (41) c. MSIS Subsystems

   (42) d. Data Entry

2. Have you filled out one of these MSIS Background Information forms before?

   (43) ___ Yes. Thank you for the data; go to the Pre-test.

   (44) ___ No. Go to question 3.

3. Age: ____ years (45)

4. Sex: ___M (46) ___F (47)

5. What was the highest level of schooling you attained? (circle one)

9 10 11 12	13 14 15 16	M.A./M.S.	Ph.D.
High School	College	(50)	(51)
(48)	(49)		

   Other (please specify) ______________________ (52-76)

6. Specify your major where appropriate:

________	________	________	________
College	M.A./M.S.	Ph.D.	Other
(77)	(78)	(79)	(80)

41B2
(1-4)

7. What is your job title?______________________________
(5) (30)

8. How long have you held your present position?___years ___ months
(31) (32)

9. How many years experience do you have in the general area of your present job position?

____
(33) (34)

10. Have you had training related to your present position in the past two years (other than the present MSIS training)?

(35)___No. Go to question 11.

(36)___Yes. Please answer the following:

a. What was the subject?______________________________
(37) (51)

b. What was the length of training?____________________
(52) (55)

c. Who offered the training?___________________________
(56) (65)

d. Rate your knowledge resulting from the training.

(66) None (67) A little (68) Some (69) Quite a bit

(70) Great deal

11. Please rate your current knowledge level of data processing (circle the appropriate answer).

(71) None (72) A little (73) Some (74) Quite a bit

(75) Great deal

12. Please rate your current knowledge level of the Federal Regulations pertaining to Safe Drinking Water Act of 1974 (circle the appropriate answer).

(76) None (77) A little (78) Some (79) Quite a bit

(80) Great deal

Thank you for your cooperation.

IV.1.T1
41T1
(1-4)

PRE-TEST

SELECTION PROCESS

Name:____________________ (5-30) Postal Code____ (31-2) Date___/___/___ Month Day Year (33-8)

1. Match the types of input forms with their function:
   (A given form may be matched with more than one function)

Form	Function
a. Processing option	(39)____enter sample and analysis data
b. Table creation	(40)____enable the user to specify needed reports
c. Record creation & maintenance	(41)____enter data into MSIS tables
d. Water quality transactions	(42)____enable the user to specify a needed PWS listing
	(43)____enter PWS-related data to a file

2. Circle T (True) or F (False) for the following statements:

T F (44) "PROC" is a processing option input form used both to initiate a program and to specify the subsystem to be run.

T F (45) "SORT" is a processing option input form used to specify a desired sequence of records for output.

T F (46) "SEL1" or "SEL2" is the processing option input form used to select records from MSIS files.

T F (47) Record creation and maintenance forms are used to enter sample and analysis data.

T F (48) The Sort Sequence numbers must be entered on the "SORT" form in ascending consecutive sequence.

T F (49) The Sort Mode must be specified as either an ascending or a descending order.

T F (50) The Data Element Logic ID number on "SEL1" and "SEL2" is used only to associate the information on the two forms.

T F (51) The Logic ID's entered on "SEL1" must be in ascending consecutive sequence.

T F (5) The Sanitary Survey PROC form is used to enter the results of a sanitary survey.

T F (6) The Sanitary Survey SORT form is required when scheduling sanitary surveys.

T F (7) The "and" conditional statement means a record will be selected if it fulfills all the requirements specified.

T F (8) The "and" and "or" conditional statements may be entered simultaneously to select records.

3. Circle all of the following that are true:

(9) a. the maximum number of SEL1 entries is 35.
(10) b. the maximum number of SEL2 entries is 35.
(11) c. the maximum number of SEL2's that may be entered in one selection run is 35.

4. Circle all of the following statements which describe what the PROC form can specify.

(12) a. the date of the output
(13) b. the period covered by the output
(14) c. the criteria for selecting records for output
(15) d. report options
(16) e. standard error processing options
(17) f. which State the output is from
(18) g. the order of the output
(19) h. the purge date of a file

5. Circle all of the following which must be specified on the SORT form to perform its function.

(20) a. ascending or descending order
(21) b. the value of the data element to be used
(22) c. the data element to be used
(23) d. the sequence of the data elements to be used
(24) e. relation symbols

6. Circle all of the following which must be specified on the SEL1 form to perform its function.

(25) a. ascending or descending order
(26) b. the value of the data element to be used

(27) c. the data elements to be used
(28) d. the sequence of the data elements to be used
(29) e. relation symbols

7. Circle all of the following which must be specified on the SEL2 form to perform its function.

(30) a. ascending or descending order
(31) b. the value of the data element to be used
(32) c. the data elements to be used
(33) d. the sequence of the data elements to be used
(34) e. relation symbols

8. Rate your current level of knowledge about MSIS. (Circle one)

(35) None (36) A little (37) Some (38) Quite a bit
(39) Great deal

Volume IV
Selection Process

Introduction

- MSIS Development
- MSIS Capabilities
- MSIS Characteristics
- MSIS Output Reports

- **MSIS Characteristics**
  - ☐ MSIS Subsystems
  - ☐ MSIS Files
  - ☐ MSIS Tables

MSIS Subsystems

- Regulations (REGS)
- PWS Inventory (PWSI)
- Water Quality Compliance (WAQC)
- Federal Reporting (FEDR)
- Standard Processing (MSIS)
- Variances and Exemptions (VAEX)
- Enforcement Actions (ENAC)
- Sanitary Survey (SRVY)
- Operator and Mailing (OPER)

MSIS Files

- Public Water (PWF)
- Periodic Sample (PSF)
- Sample and Analysis (SAF)
- Violations (VIF)
- Standard History (SHF)
- Public History (PHF)
- Deviations (DVF)
- Variances and Exemptions (VEF)
- Enforcement Actions (EAF)
- Operator and Mailing (OMF)

MSIS Tables

- Error Message (EMT)
- Data Element (DET)
- Code Value (CVT)
- Laboratory (LBT)
- Public Water (PWT)
- Regulations (RGF)

- **MSIS Output Reports**
  - ☐ Statistical
  - ☐ Input
  - ☐ Error
  - ☐ Informational

☐ **Informational Output Reports**

- PWS Comprehensive Listing
- PWS Condensed Reports
- MSIS History Reports
- Compliance Summary Report
- Chemical Sampling Schedule Reports

Unit 1
Processing Options

Types of Input Forms
- Processing Options
- Table Creation
- Record Creation and Maintenance
- Water Quality Transactions

Processing Option Input Forms
PROC
SORT
SEL1 (Selection Criteria 1)
SEL2 (Selection Criteria 2)

PROC Input Form
- Initiates Program Run
- Specifies Options
- Most Used

REGS010

MODEL STATE INFORMATION SYSTEM

REGULATIONS SUBSYSTEM

REGS.100

PROCESSING OPTIONS FOR JOB ____________

CARD ID	DATE M D Y
P R O C	0 9 / 0 7 7
1-4	5-10

STANDARD ERROR PROCESSING OPTIONS:

N (11)
Y = YES - CREATE A SPECIAL FILE OF ERROR RECORDS
N = NO - DO NOT CREATE A SPECIAL OUTPUT FILE

Y (12)
Y = YES - PRINT ONLY THE DATA ELEMENT FIELDS WHICH WERE IN ERROR
N = NO - PRINT ALL DATA ELEMENT FIELDS

PREPARED BY J. Smith DATE 9 / 9 / 77
APPROVED BY ____________ DATE __/__/__

FEDR010

MODEL STATE INFORMATION SYSTEM

FEDR.100

FEDERAL REPORTING SUBSYSTEM

PROCESSING OPTIONS FOR JOB___________________

CARD ID	DATE M D Y
PRCC	120177
1-4	5-10

REPORTING PERIOD

FROM M D Y	TO M D Y	POSTAL STATE ABBREVIATION
100176	093077	OH
14 - 19	20 - 25	26-27

DEFAULT REPORTING PERIOD IF NONE IS ENTERED: LAST YEAR BASED ON THE DATE IN COLS. 5 - 10

PREPARED BY J. Smith DATE 11/30/77
APPROVED BY ________________ DATE __/__/__

MSIS050

MODEL STATE INFORMATION SYSTEM

MSIS.100

STANDARD PROCESSING SUBSYSTEM

STANDARD HISTORY FILE PURGE

PROCESSING OPTIONS FOR JOB ________________

CARD ID	CURRENT DATE M D Y	PURGE DATE M D Y	
P R O C	01 01 84	12 31 78	DATE USED TO DETERMINE WHICH RECORDS ARE TO BE PURGED
1-4	5-10	14-19	

STANDARD HISTORY PROCESSING OPTION: 1
20

SELECT THE CODE FOR THE TYPE OF HISTORY REPORT TO BE PRINTED
1 = PRINT ALL THE PURGED RECORDS
2 = DO NOT PROUUCE A REPORT

PREPARED BY J. Smith DATE 1/1/84
APPROVED BY ________________ DATE __/__/__

WAQC220

WAQC.130

MODEL STATE INFORMATION SYSTEM
WATER QUALITY COMPLIANCE SUBSYSTEM

PROCESSING OPTIONS FOR JOB ______________

CARD ID	CURRENT DATE M D Y
P R O C	01/01/84
1-4	5-10

PURGE DATE M D Y	CONTAMINANT GROUP
12/31/82	0
14-19	20
__/__/__	1
21-26	27
__/__/__	2
28-33	34
12/31/78	3
35-40	41
__/__/__	4
42-47	48

PURGE REPORT PROCESSING OPTION: Y (49)
Y = YES, PRINT ALL PURGED RECORDS
N = NO, DO NOT PRODUCE PURGED REPORT

PREPARED BY J. Smith DATE 12/31/83
APPROVED BY ______________ DATE __/__/__

PWSI090

MODEL STATE INFORMATION SYSTEM

PWSI.103

PUBLIC WATER SYSTEM INVENTORY SUBSYSTEM

PROCESSING OPTIONS FOR JOB ______________

CARD ID	DATE M D Y	DATE M D Y	
P R O C	0 1 0 1 7 9	1 2 3 1 7 7	DATE USED TO DETERMINE WHICH RECORDS ARE TO BE PURGED
1-4	5-10	14-19	

PUBLIC HISTORY REPORT OPTION: Y
20

SELECT THE CODE FOR THE TYPE OF HISTORY REPORT TO BE PRINTED:
Y = PRODUCE PUBLIC HISTORY FILE PURGE REPORT
N = DO NOT PRODUCE THE PUBLIC HISTORY FILE PURGE REPORT

PREPARED BY J. Smith DATE 12/31/78
APPROVED BY ______________ DATE __/__/__

PWSI010 PWSI.111

MODEL STATE INFORMATION SYSTEM

PUBLIC WATER SYSTEM INVENTORY SUBSYSTEM

PROCESSING OPTIONS FOR JOB ______________

CARD ID: P R O C (1-4)

DATE M D Y: 0 9 / 0 7 7 (5-10)

STANDARD ERROR PROCESSING OPTIONS:

Value	Column	Option
N	11	Y = YES, CREATE A SPECIAL FILE OF ERROR RECORDS N = NO
Y	12	Y = YES, PRINT ONLY THE DATA ELEMENTS FIELDS WHICH ARE IN ERROR - NOT THE ENTIRE RECORD N = NO

REPORT OPTIONS:

Value	Column	Option
3	14	NEW PWS RECORDS (ALL OPTIONS ALLOWED)
3	15	INCOMPLETE PWS RECORDS (OPTIONS 2 OR 3 ONLY)
2	16	PWS STATUS REQUESTS (OPTIONS 2 OR 3 ONLY)
1	17	UNSUCCESSFUL UPDATE RECORDS (ALL OPTIONS ALLOWED)

OPTIONS FOR COLUMNS 14 - 17:
1 = DO NOT PRODUCE A REPORT
2 = PRODUCE REPORT ON PRE-PRINTED STATUS AND ENTRY FORM (TURNAROUND DOCUMENT)
3 = PRODUCE COMPREHENSIVE REPORT

PREPARED BY J. Smith DATE 9/9/77
APPROVED BY ______________ DATE __/__/__

PWSI020

MODEL STATE INFORMATION SYSTEM

PWSI.113

PUBLIC WATER SYSTEM INVENTORY SUBSYSTEM

PROCESSING OPTIONS FOR JOB ____________

CARD ID	DATE M D Y
P A O C	09 10 77
1-4	5-10

SELECT THE CODE FOR THE TYPE OF REPORT TO BE PRINTED:

PWSI030: N (14)
Y = YES, PRODUCE CONDENSED REPORT
N = NO REPORT IS PRODUCED

PWSI040: N (15)
Y = YES, PRODUCE PRODUCTION AND CAPACITY DATA REPORT
N = NO REPORT IS PRODUCED

PWSI050: Y (16)
Y = YES, PRODUCE STATE DISCRETIONARY DATA REPORT
N = NO REPORT IS PRODUCED

PWSI060: 1 (17)
1 = NO REPORT IS PRODUCED
2 = YES, PRODUCE THE STATUS AND ENTRY FORM (TURNAROUND DOCUMENT)
3 = YES, PRODUCE COMPREHENSIVE REPORT

PREPARED BY J Smith DATE 9/9/77
APPROVED BY ____________ DATE __/__/__

SRVY010

MODEL STATE INFORMATION SYSTEM

SANITARY SURVEY SUBSYSTEM

SRVY.100

PROCESSING OPTIONS FOR JOB ____________

CARD ID: P R O C (1-4)

DATE M D Y: 0 6 2 3 7 7 (5-10)

SELECTION WEIGHTS

TYPE OF WATER SUPPLY: 0 0 (11-12)

POPULATION SERVED: 0 9 (13-14)

HISTORY OF PAST VIOLATIONS: 0 0 (15-16)

DATE OF LAST SANITARY SURVEY: 0 0 (17-18)

TYPE OF SOURCE WATER: 0 1 (19-20)

PRIORITY REPORT: Y (21)

SCHEDULE REPORT: Y (22)

PRIORITY OPTION: 1 (23)

SURVEYING CAPACITY: ☐☐☐☐ (24-27)

REGION/DISTRICT

☐☐/☐☐ 28-29 30-31 ☐☐/☐☐ 32-33 34-35 ☐☐/☐☐ 36-37 38-39

☐☐/☐☐ 40-41 42-43 ☐☐/☐☐ 44-45 46-47

SURVEYING PERIOD

FROM M D Y: 0 6 2 4 7 7 (48-53)

TO M D Y: 1 2 3 1 7 7 (54-59)

PWF REPORT OPTION: 3 (60)

1 = DO NOT PRODUCE A REPORT
2 = PRODUCE A REPORT ON THE PREPRINTED STATUS AND ENTRY FORM (TURNAROUND DOCUMENT)
3 = PRODUCE A COMPREHENSIVE REPORT

PREPARED BY J. Smith DATE 6/23/77

APPROVED BY ____________ DATE __/__/__

Error Reports

- Data Entry
- Processing Options
- Warning

PROC Error Messages

- Two PROC Records Supplied
- No Processing Option cards were provided
- PROC type not SEL1, SEL2, SORT, or PROC
- PROC card contains an invalid date

SORT Input Form

- Presupposes Output
- SORT Sequence
- Limitations

PWSI030,040,
050,060,
070,080

PWSI.100

MODEL STATE INFORMATION SYSTEM
PUBLIC WATER SYSTEM INVENTORY SUBSYSTEM

SORT OPTIONS FOR JOB ______________

CARD ID	SORT SEQUENCE	MNEMONIC NAME OF DATA ELEMENT	SORT MODE	
SORT 1-4	01 5-6	PW-PL-TYPE 7-16	A 17	A=ASCENDING D=DESCENDING
	02 18-19	PW-PL-CYCL 20-29	A 30	A=ASCENDING D=DESCENDING
	03 31-32	PW-PL-STCA 33-42	D 43	A=ASCENDING D=DESCENDING
	04 44-45	PW-PL-MAXP 46-55	D 56	A=ASCENDING D=DESCENDING
	05 57-58	PW-ID 59-68	A 69	A=ASCENDING D=DESCENDING

PREPARED BY J Smith DATE 9/9/77
APPROVED BY ______________ DATE __/__/__

SORT Error Messages

- Maximum Sort – Key size has been exceeded
- Sort Sequence field not numeric
- Two sort fields have the same sequence number
- Sort Sequence number greater than 10
- Sort Option mnemonic name is invalid
- Sort mode is not ascending or descending
- Non-consecutive sort sequence values

SEL Input Forms

- Select Records
- Determine Report Usefulness
- Work Together
- Selection Process

Selection Process

- SIMPLE
- AND
- OR

SEL1 Error Messages

- Invalid file ID in SEL1 record
- Two SEL1 records have the same logic ID
- Mnemonic name in SEL1 record is invalid
- SEL1 value too long for specified mnemonic
- No SEL1 option card was provided
- Logic ID greater than 35 in SEL1 record
- SEL1 update-date value is not a valid date
- SEL1 record-ID value not numeric
- SEL1 catalog-number value not numeric

SEL2 Error Messages

- SEL2 operand has no matching SEL1 record
- No SEL2 option card was provided
- More than 35 SEL2 records were provided
- SEL2 record has invalid relational symbol

Study Problem

Request that a report of all changes to the Variances and Exemptions File (VEF) be produced on 1/2/78.

Sort the information by the most current change.

If more than one change was recorded on the same day, sort by the previous update date.

MSIS040

MODEL STATE INFORMATION SYSTEM

STANDARD PROCESSING SUBSYSTEM

MSIS.105

STANDARD HISTORY FILE SELECTION

PROCESSING OPTIONS FOR JOB ______________

CARD ID	DATE M D Y
P R O C	0 1 0 2 7 8
1-4	5-10

PREPARED BY J Smith DATE 1/2/78

APPROVED BY ______________ DATE __/__/__

MSIS040

MODEL STATE INFORMATION SYSTEM

MSIS.108

STANDARD PROCESSING SUBSYSTEM

STANDARD HISTORY FILE SELECTION

SORT OPTIONS FOR JOB ______________

CARD ID	SORT SEQUENCE	MNEMONIC NAME OF DATA ELEMENT	SORT MODE	
SORT 1-4	01 5-6	SH-CUR-UP 7-16	D 17	A=ASCENDING D=DESCENDING
	02 18-19	SH-LST-UP 20-29	D 30	A=ASCENDING D=DESCENDING
	☐☐ 31-32	☐☐☐☐☐☐☐☐☐☐ 33-42	☐ 43	A=ASCENDING D=DESCENDING
	☐☐ 44-45	☐☐☐☐☐☐☐☐☐☐ 46-55	☐ 56	A=ASCENDING D=DESCENDING
	☐☐ 57-58	☐☐☐☐☐☐☐☐☐☐ 59-68	☐ 69	A=ASCENDING D=DESCENDING

PREPARED BY J. Smith DATE 1/2/78

APPROVED BY ______________ DATE __/__/__

MODEL STATE INFORMATION SYSTEM

STANDARD PROCESSING SUBSYSTEM

STANDARD HISTORY FILE

SELECTION FORM - DEFINITION OF DATA ELEMENTS

CARD ID	DATA ELEMENT MNEMONIC NAME	DATA ELEMENT COMPARATIVE VALUE	DATA ELEMENT LOGIC ID NO.
SEL1 1-4	SH-FILE-ID 5-14	VE 15-29	01 30-31
DUP 1 - 4			
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PREPARED BY J Smith DATE 1/2/78

APPROVED BY ____________ DATE __/__/__

SIS040 MSIS.107

MODEL STATE INFORMATION SYSTEM
STANDARD PROCESSING SUBSYSTEM
STANDARD HISTORY FILE
SELECTION FORM - DEFINITION OF LOGIC FOR SELECTION

RELATION SYMBOLS:
LT = LESS THAN
EQ = EQUAL
GT = GREATER THAN
NL = NOT LESS THAN
NG = NOT GREATER THAN
NX = NOT EXISTS(EMPTY)

CARD ID	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL
S E L 2 1-4	01	E Q 5-6	02	☐☐ 7-8	03	☐☐ 9-10	04	☐☐ 11-12
	05	☐☐ 13-14	06	☐☐ 15-16	07	☐☐ 17-18	08	☐☐ 19-20
	09	☐☐ 21-22	10	☐☐ 23-24	11	☐☐ 25-26	12	☐☐ 27-28
	13	☐☐ 29-30	14	☐☐ 31-32	15	☐☐ 33-34	16	☐☐ 35-38
	17	☐☐ 37-38	18	☐☐ 39-40	19	☐☐ 41-42	20	☐☐ 43-44
	21	☐☐ 45-46	22	☐☐ 47-48	23	☐☐ 49-50	24	☐☐ 51-52
	25	☐☐ 53-54	26	☐☐ 55-56	27	☐☐ 57-58	28	☐☐ 59-60
	29	☐☐ 61-62	30	☐☐ 63-64	31	☐☐ 65-66	32	☐☐ 67-68
	33	☐☐ 69-70	34	☐☐ 71-72	35	☐☐ 73-74		

PREPARED BY J. Smith DATE 1/2/78

APPROVED BY ______________ DATE __/__/__

Study Problem

Request a condensed report of variances and exemptions that were in effect during any part of 1977 on January 2, 1978. Sort the report by PWS-ID. If a PWS has both variance(s) and exemption(s) sort variance(s) first then exemption(s). If a PWS has more than one variance and/or exemption sort them by VE-ID.

VAEX040

MODEL STATE INFORMATION SYSTEM
VARIANCES AND EXEMPTIONS SUBSYSTEM

VAEX.104

PROCESSING OPTIONS FOR JOB____________________

CARD ID	DATE M D Y		
P R O C	0 1 0 2 7 8	Y Y = YES N = NO	PRODUCE CONDENSED REPORT
1-4	5-10	14	
		N Y = YES N = NO	PRODUCE CASE HISTORY REPORT
		15	

PREPARED BY J. Smith DATE 11 21 78

APPROVED BY ____________________ DATE _/_/_

VAEX040

MODEL STATE INFORMATION SYSTEM

VAEX.103

VARIANCES AND EXEMPTIONS SUBSYSTEM

SORT OPTIONS FOR JOB ______________

CARD ID	SORT SEQUENCE	MNEMONIC NAME OF DATA ELEMENT	SORT MODE	
SORT 1-4	01 5-6	VE-PWS-ID 7-16	A 17	A=ASCENDING D=DESCENDING
	02 18-19	VE-TYPE 20-29	D 30	A=ASCENDING D=DESCENDING
	03 31-32	VE-ID 33-42	A 43	A=ASCENDING D=DESCENDING
	☐☐ 44-45	☐☐☐☐☐☐☐☐☐☐ 46-55	☐ 56	A=ASCENDING D=DESCENDING
	☐☐ 57-58	☐☐☐☐☐☐☐☐☐☐ 59-68	☐ 69	A=ASCENDING D=DESCENDING

PREPARED BY J Smith DATE 1/2/78

APPROVED BY ______________ DATE __/__/__

VAEX040

MODEL STATE INFORMATION SYSTEM
VARIANCES AND EXEMPTIONS SUBSYSTEM

VAEX.105

SELECTION FORM - DEFINITION OF DATA ELEMENTS

CARD ID	DATA ELEMENT MNEMONIC NAME	DATA ELEMENT COMPARATIVE VALUE	DATA ELEMENT LOGIC ID NO.
SEL1	VE-EXP-DT	123176	01
1-4	5-14	15-29	30-31
DUP 1 - 4	VE-EFF-DT	010178	02
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PREPARED BY J. Smith DATE 1/2/78
APPROVED BY ______________ DATE __/__/__

Will we get all
variances and
exemptions in
effect during 1977?

VAEX040 VAEX.106

MODEL STATE INFORMATION SYSTEM
VARIANCES AND EXEMPTIONS SUBSYSTEM

SELECTION FORM - DEFINITION OF LOGIC FOR SELECTION

RELATION SYMBOLS:
LT = LESS THAN
EQ = EQUAL
GT = GREATER THAN
NL = NOT LESS THAN
NG = NOT GREATER THAN
NX = NOT EXISTS (EMPTY)

CARD ID	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL
SEL2 1-4	01	GT 5-6	02	LT 7-8	03	☐☐ 9-10	04	☐☐ 11-12
	05	☐☐ 13-14	06	☐☐ 15-16	07	☐☐ 17-18	08	☐☐ 19-20
	09	☐☐ 21-22	10	☐☐ 23-24	11	☐☐ 25-26	12	☐☐ 27-28
	13	☐☐ 29-30	14	☐☐ 31-32	15	☐☐ 33-34	16	☐☐ 35-36
	17	☐☐ 37-38	18	☐☐ 39-40	19	☐☐ 41-42	20	☐☐ 43-44
	21	☐☐ 45-46	22	☐☐ 47-48	23	☐☐ 49-50	24	☐☐ 51-52
	25	☐☐ 53-54	26	☐☐ 55-56	27	☐☐ 57-58	28	☐☐ 59-60
	29	☐☐ 61-62	30	☐☐ 63-64	31	☐☐ 65-66	32	☐☐ 67-68
	33	☐☐ 69-70	34	☐☐ 71-72	35	☐☐ 73-74		

PREPARED BY J. Smith DATE 1/2/78

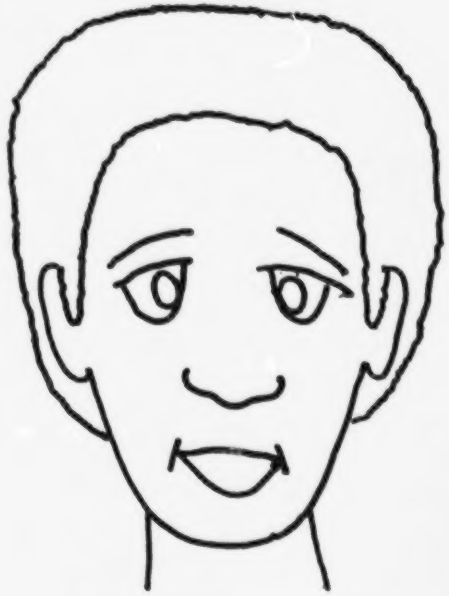
APPROVED BY ________ DATE __/__/__

Study Problem

Generate enforcement action case histories for those actions whose legal status is either "not a legal action" or "initial action pending."

Arrange the report in ascending order by the PWS-ID.

Why is this an
OR condition?



ENAC020

MODEL STATE INFORMATION SYSTEM
ENFORCEMENT ACTIONS SUBSYSTEM

ENAC.105

PROCESSING OPTIONS FOR JOB ______________

CARD ID
P R O C
1-4

DATE
M D Y
0 1 0 2 7 8
5-10

N (14) Y = YES N = NO PRODUCE CONDENSED REPORT

Y (15) Y = YES N = NO PRODUCE CASE HISTORY REPORT

PREPARED BY J Smith DATE 1/2/78
APPROVED BY ______________ DATE __/__/__

MODEL STATE INFORMATION SYSTEM
ENFORCEMENT ACTIONS SUBSYSTEM

SORT OPTIONS FOR JOB ______________

CARD ID	SORT SEQUENCE	MNEMONIC NAME OF DATA ELEMENT	SORT MODE	
SORT 1-4	01 5-6	EA-PM-ID 7-16	A 17	A=ASCENDING D=DESCENDING
	☐☐ 18-19	☐☐☐☐☐☐☐☐☐☐ 20-29	☐ 30	A=ASCENDING D=DESCENDING
	☐☐ 31-32	☐☐☐☐☐☐☐☐☐☐ 33-42	☐ 43	A=ASCENDING D=DESCENDING
	☐☐ 44-45	☐☐☐☐☐☐☐☐☐☐ 46-55	☐ 56	A=ASCENDING D=DESCENDING
	☐☐ 57-58	☐☐☐☐☐☐☐☐☐☐ 59-68	☐ 69	A=ASCENDING D=DESCENDING

PREPARED BY J. Smith DATE 1/2/78
APPROVED BY ______________ DATE __/__/__

ENAC020

MODEL STATE INFORMATION SYSTEM
ENFORCEMENT ACTIONS SUBSYSTEM

ENAC.107

SELECTION FORM - DEFINITION OF DATA ELEMENTS

CARD ID	DATA ELEMENT MNEMONIC NAME	DATA ELEMENT COMPARATIVE VALUE	DATA ELEMENT LOGIC ID NO.
SEL1 1-4	EA-LEGALST 5-14	L 15-29	01 30-31
DUP 1 - 4	EA-LEGALST	I	02
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PREPARED BY J Smith DATE 1/2/78

APPROVED BY ______________ DATE __/__/__

ENAC020 ENAC.108

MODEL STATE INFORMATION SYSTEM
ENFORCEMENT ACTIONS SUBSYSTEM

SELECTION FORM - DEFINITION OF LOGIC FOR SELECTION

RELATION SYMBOLS: LT = LESS THAN
EQ = EQUAL
GT = GREATER THAN
NL = NOT LESS THAN
NG = NOT GREATER THAN
NX = NOT EXISTS(EMPTY)

CARD ID	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL
SEL2 1-4	01	EQ 5-6	02	☐☐ 7-8	03	☐☐ 9-10	04	☐☐ 11-12
	05	☐☐ 13-14	06	☐☐ 15-16	07	☐☐ 17-18	08	☐☐ 19-20
	09	☐☐ 21-22	10	☐☐ 23-24	11	☐☐ 25-26	12	☐☐ 27-28
	13	☐☐ 29-30	14	☐☐ 31-32	15	☐☐ 33-34	16	☐☐ 35-36
	17	☐☐ 37-38	18	☐☐ 39-40	19	☐☐ 41-42	20	☐☐ 43-44
	21	☐☐ 45-46	22	☐☐ 47-48	23	☐☐ 49-50	24	☐☐ 51-52
	25	☐☐ 53-54	26	☐☐ 55-56	27	☐☐ 57-58	28	☐☐ 59-60
	29	☐☐ 61-62	30	☐☐ 63-64	31	☐☐ 65-66	32	☐☐ 67-68
	33	☐☐ 69-70	34	☐☐ 71-72	35	☐☐ 73-74		

PREPARED BY J. Smith DATE 1/2/78
APPROVED BY ____________ DATE __/__/__

ENAC020

ENAC.108

MODEL STATE INFORMATION SYSTEM
ENFORCEMENT ACTIONS SUBSYSTEM

SELECTION FORM - DEFINITION OF LOGIC FOR SELECTION

RELATION SYMBOLS:
LT = LESS THAN
EQ = EQUAL
GT = GREATER THAN
NL = NOT LESS THAN
NG = NOT GREATER THAN
NX = NOT EXISTS(EMPTY)

CARD ID	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL
S E L 2 1-4	01	☐☐ 5-6	02	E Q 7-8	03	☐☐ 9-10	04	☐☐ 11-12
	05	☐☐ 13-14	06	☐☐ 15-16	07	☐☐ 17-18	08	☐☐ 19-20
	09	☐☐ 21-22	10	☐☐ 23-24	11	☐☐ 25-26	12	☐☐ 27-28
	13	☐☐ 29-30	14	☐☐ 31-32	15	☐☐ 33-34	16	☐☐ 35-36
	17	☐☐ 37-38	18	☐☐ 39-40	19	☐☐ 41-42	20	☐☐ 43-44
	21	☐☐ 45-46	22	☐☐ 47-48	23	☐☐ 49-50	24	☐☐ 51-52
	25	☐☐ 53-54	26	☐☐ 55-56	27	☐☐ 57-58	28	☐☐ 59-60
	29	☐☐ 61-62	30	☐☐ 63-64	31	☐☐ 65-66	32	☐☐ 67-68
	33	☐☐ 69-70	34	☐☐ 71-72	35	☐☐ 73-74		

PREPARED BY J. Smith DATE 1/2/78

APPROVED BY ______________ DATE __/__/__

Study Problem

Create one mailing label for each PWS operator whose certification in class "0" or "6" will expire before July 1, 1978.

OPER020 OPER.102

MODEL STATE INFORMATION SYSTEM
OPERATOR AND MAILING SUBSYSTEM

PROCESSING OPTIONS FOR JOB ____________

CARD ID	DATE M D Y
P R O C	0 5 0 1 7 8
1-4	5-10

REPORT OPTIONS:

N (14) Y = YES N = NO PRODUCE CERTIFIED OPERATORS REPORT

N (15) Y = YES N = NO PRODUCE MAILING DISTRIBUTION REPORT

Y (16) Y = YES N = NO PRODUCE MAILING LABELS

1 (17) NUMBER OF LABELS

PREPARED BY J Smith DATE 5/1/78
APPROVED BY ____________ DATE __/__/__

OPER020

MODEL STATE INFORMATION SYSTEM
OPERATOR AND MAILING SUBSYSTEM

OPER.103

SORT OPTIONS FOR JOB ________________

CARD ID	SORT SEQUENCE	MNEMONIC NAME OF DATA ELEMENT	SORT MODE	
SORT 1-4	01 5-6	OM-ADS-ZIP 7-16	A 17	A=ASCENDING D=DESCENDING
	☐☐ 18-19	☐☐☐☐☐☐☐☐☐☐ 20-29	☐ 30	A=ASCENDING D=DESCENDING
	☐☐ 31-32	☐☐☐☐☐☐☐☐☐☐ 33-42	☐ 43	A=ASCENDING D=DESCENDING
	☐☐ 44-45	☐☐☐☐☐☐☐☐☐☐ 46-55	☐ 56	A=ASCENDING D=DESCENDING
	☐☐ 57-58	☐☐☐☐☐☐☐☐☐☐ 59-68	☐ 69	A=ASCENDING D=DESCENDING

PREPARED BY J. Smith DATE 5/1/78

APPROVED BY ______________________ DATE __/__/__

OPER020

MODEL STATE INFORMATION SYSTEM
OPERATOR AND MAILING SUBSYSTEM

OPER.104

SELECTION FORM - DEFINITION OF DATA ELEMENTS

CARD ID	DATA ELEMENT MNEMONIC NAME	DATA ELEMENT COMPARATIVE VALUE	DATA ELEMENT LOGIC ID NO.
SEL1 1-4	OM-OP-CLS 5-14	0 15-29	01 30-31
DUP 1 - 4	OM-RNL-DT	070178	02
.	OM-OP-CLS	6	03
.			
.			
.			
.			
.			
.			
.			
.			
.			
.			

PREPARED BY J Smith DATE 5/1/78
APPROVED BY ______ DATE __/__/__

How are the
conditions
related?

OPER020

MODEL STATE INFORMATION SYSTEM
OPERATOR AND MAILING SUBSYSTEM

OPER.105

SELECTION FORM - DEFINITION OF LOGIC FOR SELECTION

RELATION SYMBOLS:
LT = LESS THAN
EQ = EQUAL
GT = GREATER THAN
NL = NOT LESS THAN
NG = NOT GREATER THAN
NX = NOT EXISTS(EMPTY)

CARD ID	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL
S E L 2 1-4	01	EQ 5-6	02	LT 7-8	03	☐☐ 9-10	04	☐☐ 11-12
	05	☐☐ 13-14	06	☐☐ 15-16	07	☐☐ 17-18	08	☐☐ 19-20
	09	☐☐ 21-22	10	☐☐ 23-24	11	☐☐ 25-26	12	☐☐ 27-28
	13	☐☐ 29-30	14	☐☐ 31-32	15	☐☐ 33-34	16	☐☐ 35-36
	17	☐☐ 37-38	18	☐☐ 39-40	19	☐☐ 41-42	20	☐☐ 43-44
	21	☐☐ 45-46	22	☐☐ 47-48	23	☐☐ 49-50	24	☐☐ 51-52
	25	☐☐ 53-54	26	☐☐ 55-56	27	☐☐ 57-58	28	☐☐ 59-60
	29	☐☐ 61-62	30	☐☐ 63-64	31	☐☐ 65-66	32	☐☐ 67-68
	33	☐☐ 69-70	34	☐☐ 71-72	35	☐☐ 73-74		

PREPARED BY J. Smith DATE 5/1/78
APPROVED BY ____________ DATE __/__/__

OPER020 OPER.105

MODEL STATE INFORMATION SYSTEM
OPERATOR AND MAILING SUBSYSTEM

SELECTION FORM - DEFINITION OF LOGIC FOR SELECTION

RELATION SYMBOLS:
LT = LESS THAN
EQ = EQUAL
GT = GREATER THAN
NL = NOT LESS THAN
NG = NOT GREATER THAN
NX = NOT EXISTS (EMPTY)

CARD ID	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL
SEL2 1-4	01	☐☐ 5-6	02	LT 7-8	03	EQ 9-10	04	☐☐ 11-12
	05	☐☐ 13-14	06	☐☐ 15-16	07	☐☐ 17-18	08	☐☐ 19-20
	09	☐☐ 21-22	10	☐☐ 23-24	11	☐☐ 25-26	12	☐☐ 27-28
	13	☐☐ 29-30	14	☐☐ 31-32	15	☐☐ 33-34	16	☐☐ 35-36
	17	☐☐ 37-38	18	☐☐ 39-40	19	☐☐ 41-42	20	☐☐ 43-44
	21	☐☐ 45-46	22	☐☐ 47-48	23	☐☐ 49-50	24	☐☐ 51-52
	25	☐☐ 53-54	26	☐☐ 55-56	27	☐☐ 57-58	28	☐☐ 59-60
	29	☐☐ 61-62	30	☐☐ 63-64	31	☐☐ 65-66	32	☐☐ 67-68
	33	☐☐ 69-70	34	☐☐ 71-72	35	☐☐ 73-74		

PREPARED BY J. Smith DATE 5/1/78
APPROVED BY ______________ DATE __/__/__

PROC and SORT

PWSI.113

1. State the purpose of the entries in positions 1-4 ____________________
____
____

2. State the purpose of entries in positions 5-10 ____________________
____

3. Circle the best valid entry.

60177	121577	006178	MY1078

4. State the purpose of the entries in positions 14-17 ____________________
____
____

5. Circle the group of best valid entries.

Y	Y	N	N
Y	Y	N	Y
Y	N	L	N
2	4	1	0

PWSI.100

1. State the purpose of the entries in positions 1-4 ____________________
____
____

2. State the purpose of entries in positions 5-6, 18-19, 31-32, 44-45, and 57-58. ____
____

3. Circle the group of best valid entries.

1	01	01	05
2	02	02	04
3	03	03	03
4	03	04	02
5	06	05	01

PWSI.100 (con't)

4. State the purpose of entries in positions 7-16, 20-29, 33-42, 46-55, and 59-68. ______________________________

____

____

5. Circle the group of best valid entries.

PWF-PLANT-TYPE	SH-FILE-ID	1	PW-PL-TYPE
PWF-PLANT-CYCLE	SH-REC-ID	2	PW-PL-CYCL
PWF-PLANT-STORAGE	SH-LST-UP	3	PW-PL-STCA
PWF-PLANT-PRODUCTION	SH-CUR-UP	4	PW-PL-MAXP
PWS-IDENTIFICATION	SH-OLD-VAL	5	PW-ID

6. State the purpose of entries in positions 17, 30, 43, 56, 69. ______

____

7. Circle the group of best valid entries.

A	1	A	E
B	2	A	D
C	3	D	C
D	4	D	B
E	5	A	A

PWSI020

MODEL STATE INFORMATION SYSTEM

PWSI.113

PUBLIC WATER SYSTEM INVENTORY SUBSYSTEM

PROCESSING OPTIONS FOR JOB ________________

CARD ID
P R O C
1-4

DATE
M D Y
☐☐☐☐☐☐
5-10

SELECT THE CODE FOR THE TYPE OF REPORT TO BE PRINTED:

PWSI030: ☐ 14
Y = YES, PRODUCE CONDENSED REPORT
N = NO REPORT IS PRODUCED

PWSI040: ☐ 15
Y = YES, PRODUCE PRODUCTION AND CAPACITY DATA REPORT
N = NO REPORT IS PRODUCED

PWSI050: ☐ 16
Y = YES, PRODUCE STATE DISCRETIONARY DATA REPORT
N = NO REPORT IS PRODUCED

PWSI060: ☐ 17
1 = NO REPORT IS PRODUCED
2 = YES, PRODUCE THE STATUS AND ENTRY FORM (TURNAROUND DOCUMENT)
3 = YES, PRODUCE COMPREHENSIVE REPORT

PREPARED BY ______________________ DATE ___/___/___

APPROVED BY ______________________ DATE ___/___/___

PWSI030,040,
050,060,
070,080

PWSI.100

MODEL STATE INFORMATION SYSTEM

PUBLIC WATER SYSTEM INVENTORY SUBSYSTEM

SORT OPTIONS FOR JOB ________________

CARD ID	SORT SEQUENCE	MNEMONIC NAME OF DATA ELEMENT	SORT MODE	
S O R T 1-4	☐☐ 5-6	☐☐☐☐☐☐☐☐☐☐ 7-16	☐ 17	A=ASCENDING D=DESCENDING
	☐☐ 18-19	☐☐☐☐☐☐☐☐☐☐ 20-29	☐ 30	A=ASCENDING D=DESCENDING
	☐☐ 31-32	☐☐☐☐☐☐☐☐☐☐ 33-42	☐ 43	A=ASCENDING D=DESCENDING
	☐☐ 44-45	☐☐☐☐☐☐☐☐☐☐ 46-55	☐ 56	A=ASCENDING D=DESCENDING
	☐☐ 57-58	☐☐☐☐☐☐☐☐☐☐ 59-68	☐ 69	A=ASCENDING D=DESCENDING

PREPARED BY ______________________________ DATE ___/___/___

APPROVED BY ______________________________ DATE ___/___/___

IV.1.E2

SEL1 and SEL2

PWSI.107

1. State the purpose of the entries in positions 1-4.

____

____

2. State the purpose of entries in positions 5-14.

____

____

3. Circle the best valid entry.

PW-ID SH-FILE-ID PWS-ID CODE-ID

4. State the purpose of entries in positions 15-29.

____

____

5. Circle the best valid entry.

PWS-ID 0000000 GT 12345678910111213

6. State the purpose of entries in positions 30-31.

____

____

7. Circle the best valid entry

10 GT 1 01

8. What is the purpose of the remaining lines on the form? __________

____

____

PWSI.108

1. State the purpose of the entry in positions 1-4.

   ____

   ____

2. State the purpose of the "Data Element Logic ID No.". __________

   ____

3. State the purpose of entries in positions 5-6.

   ____

   ____

4. Circle the best valid entry.

   EQ   GR   <   01

5. What is the purpose of the remaining positions on the form? ________

   ____

   ____

PWS1020.080 PWS1.107

MODEL STATE INFORMATION SYSTEM

PUBLIC WATER SYSTEM INVENTORY SUBSYSTEM

SELECTION FORM - DEFINITION OF DATA ELEMENTS

CARD ID	DATA ELEMENT MNEMONIC NAME	DATA ELEMENT COMPARATIVE VALUE	DATA ELEMENT LOGIC ID NO.
S E L 1 1-4	5-14	15-29	30-31
DUP 1 - 4			
.			
.			
.			
.			
.			
.			
.			
.			
.			
.			
.			

PREPARED BY ______________________ DATE __/__/__

APPROVED BY ______________________ DATE __/__/__

MODEL STATE INFORMATION SYSTEM

PUBLIC WATER SYSTEM INVENTORY SUBSYSTEM

SELECTION FORM - DEFINITION OF LOGIC FOR SELECTION

RELATION SYMBOLS: LT = LESS THAN
EQ = EQUAL
GT = GREATER THAN
NL = NOT LESS THAN
NG = NOT GREATER THAN
NX = NOT EXISTS(EMPTY)

CARD ID	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL
S E L 2 1-4	01	☐☐ 5-6	02	☐☐ 7-8	03	☐☐ 9-10	04	☐☐ 11-12
	05	☐☐ 13-14	06	☐☐ 15-16	07	☐☐ 17-18	08	☐☐ 19-20
	09	☐☐ 21-22	10	☐☐ 23-24	11	☐☐ 25-26	12	☐☐ 27-28
	13	☐☐ 29-30	14	☐☐ 31-32	15	☐☐ 33-34	16	☐☐ 35-36
	17	☐☐ 37-38	18	☐☐ 39-40	19	☐☐ 41-42	20	☐☐ 43-44
	21	☐☐ 45-46	22	☐☐ 47-48	23	☐☐ 49-50	24	☐☐ 51-52
	25	☐☐ 53-54	26	☐☐ 55-56	27	☐☐ 57-58	28	☐☐ 59-60
	29	☐☐ 61-62	30	☐☐ 63-64	31	☐☐ 65-66	32	☐☐ 67-68
	33	☐☐ 69-70	34	☐☐ 71-72	35	☐☐ 73-74		

PREPARED BY ______________________________ DATE __/__/__

APPROVED BY ______________________________ DATE __/__/__

PROC and SORT

PWSI.113

1. State the purpose of the entries in positions 1-4 to identify the type of processing option to the computer - PROC.
2. State the purpose of entries in positions 5-10 to identify the date of the request and/or the date of the report generated.
3. Circle the best valid entry

60177 [✓ 121577] 006178 MY1078

4. State the purpose of the entries in positions 14-17 to specify the report(s) desired, if any.
5. Circle the best valid entry

[✓ Y]	Y	N	N
[✓ Y]	Y	N	Y
[✓ Y]	N	1	N
[✓ 2]	4	1	0

PWSI.100

1. State the purpose of the entries in positions 1-4 to identify the type of processing option to the computer - SORT.
2. State the purpose of entries in positions 5-6, 18-19, 31-32, 44-45, and 57-58 to specify to the computer the order in which the fields of the records should be used in determining the output sequence.

PWSI.100

3. Circle the group of best valid entries

1	01	[✓ 01]	05
2	02	[✓ 02]	04
3	03	[✓ 03]	03
4	03	[✓ 04]	02
5	06	[✓ 05]	01

4. State the purpose of entries in positions 7-16, 20-29, 33-42, 46-55, and 59-68 to identify the fields to the computer that are to be used in determining the output sequence.

5. Circle the group of best valid entries.

PWF-PLANT-TYPE	SH-FILE-ID	1	[✓ PW-PL-TYPE]
PWF-PLANT-CYCLE	SH-REC-ID	2	[✓ PW-PL-CYCL]
PWF-PLANT-STORAGE	SH-LST-UP	3	[✓ PW-PL-STCA]
PWF-PLANT-PRODUCTION	SH-CUR-UP	4	[✓ PW-PL-MAXP]
PWS-IDENTIFICATION	SH-OLD-VAL	5	[✓ PW-ID]

6. State the purpose of entries in positions 17, 30, 43, 56, 69 to specify the order of the data element named in the respective previous positions.

7. Circle the group of best valid entries.

A	1	[✓ A]	E
B	2	[✓ A]	D
C	3	[✓ D]	C
D	4	[✓ D]	B
E	5	[✓ A]	A

SEL1 and SEL2

PWSI.107

1. State the purpose of the entries in positions 1-4.

   to identify the type of processing option to the computer - SEL1.

2. State the purpose of entries in positions 5-14.

   to specify the field of a record to be compared to determine selection.

3. Circle the best valid entry.

   [✓ PW-ID] SH-FILE-ID PWS-ID CODE-NO

4. State the purpose of entries in positions 15-29.

   to specify the valid value of the data element specified with which a record must have a specified relationship to meet the condition.

5. Circle the best valid entry.

   PWS-ID [✓ 0000000] GT 12345678910111213

6. State the purpose of entries in positions 30-31.

   to identify the corresponding relation symbol on SEL2.

7. Circle the best valid entry.

   10 GT 1 [✓ 01]

8. What is the purpose of the remaining lines on the form? to specify more conditions to be used in the selection of records.

IV.1.A2

SEL1 and SEL2

PWSI.108

1. State the purpose of the entry in positions 1-4.

   to identify the type of processing option to the computer - SEL2.

2. State the purpose of the "Data Element Logic ID No.". to identify the corresponding entry on SEL1.

3. State the purpose of entries in positions 5-6.

   to identify the relationship desired between a record's data element and the value specified on SEL1.

4. Circle the best valid entry.

   [✓ EQ]   GR   <   01

5. What is the purpose of the remaining positions on the form? to assign additional relationships desired between other data elements or values specified on SEL1.

IV.2.T1
42T1
(1-4)

POST-TEST

SELECTION PROCESS

Name:______________________ (5-30) Postal Code_____ (31-2) Date ___/___/___ Month Day Year (33-8)

1. Match the types of input forms with their function:
(A given form may be matched with more than one function)

Form

a. Processing option
b. Table creation
c. Record creation & maintenance
d. Water quality transactions

Function

(39)_____enter sample and analysis data
(40)_____enable the user to specify needed reports
(41)_____enter data into MSIS tables
(42)_____enable the user to specify a needed PWS listing
(43)_____enter PWS-related data to a file

2. Circle T (True) or F (False) for the following statements:

T F (44) "PROC" is a processing option input form used both to initiate a program and to specify the subsystem to be run.

T F (45) "SORT" is a processing option input form used to specify a desired sequence of records for output.

T F (46) "SEL1" or "SEL2" is the processing option input form used to select records from MSIS files.

T F (47) Record creation and maintenance forms are used to enter sample and analysis data.

T F (48) The Sort Sequence numbers must be entered on the "SORT" form in ascending consecutive sequence.

T F (49) The Sort Mode must be specified as either an ascending or a descending order.

T F (50) The Data Element Logic ID number on "SEL1" and "SEL2" is used only to associate the information on the two forms.

T F (51) The Logic ID's entered on "SEL1" must be in ascending consecutive sequence.

T F
(8) The Sanitary Survey PROC form is used to enter the results of a sanitary survey.

T F
(9) The Sanitary Survey SORT form is required when scheduling sanitary surveys.

T F
(10) The "and" conditional statement means a record will be selected if it fulfills all the requirements specified.

T F
(11) The "and" and "or" conditional statements may be entered simultaneously to select records.

3. Circle all of the following that are true:

(12) a. the maximum number of SEL1 entries is 35.
(13) b. the maximum number of SEL2 entries is 35.
(14) c. the maximum number of SEL2's that may be entered in one selection run is 35.

4. Circle all of the following statements which describe what the PROC form can specify.

(15) a. the date of the output
(16) b. the period covered by the output
(17) c. the criteria for selecting records for output
(18) d. report options
(19) e. standard error processing options
(20) f. which State the output is from
(21) g. the order of the output
(22) h. the purge date of a file

5. Circle all of the following which must be specified on the SORT form to perform its function.

(23) a. ascending or descending order
(24) b. the value of the data element to be used
(25) c. the data element to be used
(26) d. the sequence of the data elements to be used
(27) e. relation symbols

6. Circle all of the following which must be specified on the SEL1 form to perform its function.

(28) a. ascending or descending order
(29) b. the value of the data element to be used

(30) c. the data elements to be used
(31) d. the sequence of the data elements to be used
(32) e. relation symbols

7. Circle all of the following which must be specified on the SEL2 form to perform its function.

(33) a. ascending or descending order
(34) b. the value of the data element to be used
(35) c. the data elements to be used
(36) d. the sequence of the data elements to be used
(37) e. relation symbols

8. Rate your current level of knowledge about MSIS. (Circle one)

(38) None (39) A little (40) Some (41) Quite a bit
(42) Great deal

MODEL STATE INFORMATION SYSTEM

PART IV

COURSE REFERENCE MATERIAL

GLOSSARY

Terms are included in this glossary only if their meanings differ from those found in a standard English language dictionary.

Analysis:

The separation of any abstract entity or material into its constituant elements, such as chemical-intentionally produced decomposition or separation of materials into their ingredients to find their kind or quality.

Analysis Method:

The method or technique utilized to obtain analysis results.

Analytical Techniques:

The methods used to determine the components of a substance, especially raw water.

Batch Processing:

A procedure in which a number of transactions, for example on keypunched cards, are accumulated before being processed together.

Check Sampling:

The act of acquiring additional quantities of water for analysis over and above the regular samples due to the suspicion of violating maximum contaminant levels.

Code:

A system used for brevity of communication in which arbitrarily chosen words, letters, or symbols are assigned definite meanings.

Computer:

A machine which accepts input data, processes it, and gives output data.

Computer Program:

A sequence of computer-readable instructions used in conjunction with appropriate data to perform specified logical tasks.

Correction:

Additions, subtractions, or changes to a computer file.

Course:

All content taught in one individual MSIS training program volume. A course is subdivided into units.

Data:

Raw facts or statistics which alone have little or no meaning, but as a group allow some meaningful relationships to be drawn.

Data Element:

An identifiable item of information within a record. See the Data Element Dictionary for all data elements used in MSIS.

Data Processing:

The act of manipulating information to obtain a desired result, especially with the use of a computer.

Economical:

Of or pertaining to the financial reasons for granting variances and exemptions.

Enforcement:

The act of creating and maintaining compliance using coercive methods.

Enforcement Action:

An act intended to generate compliance.

Exemption:

Authorized waiver of an MCL requirement due to compelling factors, such as need for a PWS to design and build effective treatment facilities.

Field:

See data element.

File:

A collection of records systematically arranged to facilitate quick reference; may be stored on magnetic tape or magnetic disc.

Goal:

A general achievement toward which effort is directed.

Gross Alpha:

A group of substances which emit Alpha particle radiation.

Gross Beta:

A group of substances which emit Beta particle radiation.

Hardware:

The physical equipment in a data processing system (contrasted with software).

Information:

Data that has been processed to obtain specific results which increase knowledge of the recipient and is used as the basis for decision making.

Inorganic:

Of or pertaining to substances that are not hydrocarbons or their derivatives.

Input:

Information which is specially prepared for acceptance by computer programs. Usually written down on special forms, then put into machine-readable form by, for example, keypunching.

Integrity:

Presumed reliability of data.

Internal:

Data processing occurring within the computer automatically according to instructions from computer programs.

Inventory:

A detailed, descriptive list, for example, of Public Water Systems.

Magnetic Disc:

A device which stores data on the magnetizable surfaces of one or more rotating discs, which look like a stack of phonograph records.

Magnetic tape:

A device which stores data on the magnetizable surface of a long strip of tape (the tape is typically 1 inch wide and 2400 feet long).

Maintain:

Actions taken to ensure up-to-date computer files.

Management Information System:

An organized method of maintaining facts pertinent to the governing of the operations of an organization.

Model State Information System:

(MSIS) a batch computer system designed to (1) maintain records on public water systems and the quality of the water they supply, and (2) prepare reports.

Monitor:

The acts of (1) a PWS observing and checking water quality or (2) a State observing and checking PWSs.

National Inventory File:

A computerized list of many public water systems in the United States; previously used to monitor water quality.

Objective:

A specific achievement that efforts are intended to attain.

Online Processing:

A procedure for inputting data computer whenever needed for immediate data processing, often by typewriter terminal.

Operator:

One who runs a public water system.

Organic:

Of or pertaining to substances that are hydrocarbons or their derivatives.

Output:

Any information passed from the computer.

Primacy:

Primary enforcement responsibility for carrying out the Safe Drinking Water Act of 1974.

Public Water System (PWS):

A set of components for the provision of piped water to persons for human consumption, if such facility has at least fifteen service connections or regularly serves at least twenty-five individuals 60 or more days per year.

Purge:

To remove from a computer those items no longer desired.

Raw Water:

Water at the source before any treatment.

Record:

A logical group of data elements.

Regulations:

Rules created by EPA within the guidelines established by the SDWA and having the same authority.

Report:

Information formatted by the computer in either human-readable form (such as a printed report) or machine-readable form (such as a magnetic tape).

Sample:

A portion of the whole to represent the whole, especially water.

Sanitary Survey:

An on-site review of the water source, facilities, equipment, operation, and maintenance of a public water system for the purpose of evaluating the adequacy of such source for producing and distributing safe drinking water.

Selection Process:

The method used by MSIS for selecting information from a computer file for use in a report. Many different criteria can be used in the selection of the data.

Software:

The computer programs required for the computer to work.

Subsystem:

A subset of the MSIS computer system. There are nine MSIS subsystems.

System:

A method or methods of accomplishing a function or functions, especially with a computer.

Table:

A computer file of brief information usually set up in logical relationships to permit quick access, often on magnetic disc.

Turnaround Document:

A form containing computer-printed information which needs additional information written on it; called "turnaround" since it is both an output and an input.

Unit:

A subset of teaching material within a course.

Variance:

Authorized deviation from an applicable national drinking water regulation because characteristics of the raw water source cannot be corrected by available means.

List of Abbreviations

Abbreviation	Meaning
BIP	Background Informational Package
CVT	Code Value Table
DET	Data Element Table
DVF	Deviations File
EAF	Enforcement Actions File
EMT	Error Message Table
ENAC	Enforcement Actions Subsystem
EPA	Environmental Protection Agency
FEDR	Federal Reporting Subsystem
LBT	Laboratory Table
MCL	Maximum Contaminant Level
MSIS	Model State Information System; also MSIS Standard Processing Subsystem
NIF	National Inventory File
NIPDWR	National Interim Primary Drinking Water Regulations
OMF	Operator and Mailing File
OPER	Operator and Mailing Subsystem
OWS	Office of Water Supply
PSF	Periodic Sample and Analysis File
PWF	Public Water System File
PWS	Public Water System
PWSI	Public Water System Inventory Subsystem
PWT	Public Water System Table
REGS	Regulations Subsystem

RGF	Regulations File
SAF	Sample and Analysis File
SDWA	Safe Drinking Water Act
SHF	MSIS Standard History File
SRVY	Sanitary Survey Subsystem
VAEX	Variances and Exemptions Subsystem
VEF	Variances and Exemptions File
VIF	Violations File
WAQC	Water Quality Compliance Subsystem

ANNOTATED BIBLIOGRAPHY

Bolton, Charles K., and Boyer, Ronald K., *One-Way and Two-Way Communication in the Classroom*. Institute for Research and Training in Higher Education, University of Cincinnati, Cincinnati, Ohio, September 20, 1971.

Both types of communication are compared. Differences in the process of communication in each instance are compared. The relationship to teaching and psychological size is made, and the teacher's individual style and experimental new behavior are discussed.

Cushman, Frank, *Training Procedures*. Wiley and Sons, Inc., New York, 1943.

Four common fallacies of training packages are given. He lists and briefly describes sixteen training methods and devices.

Davis, Larry N., and McCallon, Earl, *Planning, Conducting and Evaluating Workshops*. Learning Concepts, 1974.

This book tends to be very perscriptive - almost a check list of do's and don'ts for conducting workshop sessions. It is not theoretical but should make a handy reference for quick review during any workshop phase - planning, conducting, or evaluating.

Davis, R.H., Alexander, L.T., and Yelon, S.L., *Learning System Design: An Approach to the Improvement of Instruction*. McGraw Hill Book Co., New York, 1974.

A good overview of instructional systems design. An orientation is not provided to any particular content area but the general approach to systems design is presented. Individuals must apply the information to their specific needs. The semi-programmed text, with sensible definitions, is easy to read.

Dubin, Robert, and Taveggia, Thomas C., *The Teaching-Learning Paradox*. University of Oregon, Eugene, Oregon, 1968.

The literature dealing with comparative studies of teaching techniques from 1924 to 1965 is covered. Comparisons are made on face-to-face methods (discussion, lecture, and combinations) and both supervised and unsupervised self-study. An important conclusion was reached that in no instance were significant differences in teaching methods found when results were measured by final examinations on course content.

Emerson, Lynn A., How to Prepare Training Manuals. University of the State of New York, Albany, New York, 1952.

Eight steps in the process of developing instructional materials are outlined along with six basic principles of learning. A useful aspect that is described are eight good, basic teaching practices which should be implemented in any teaching method.

Glaser, Robert, Training Research and Education. Wiley and Sons, Inc., New York, 1962.

Goldstein, Irwin L., Training: Program Development and Evaluation. Brooks/Cole Publishing Company, Monterey, California, 1974.

The advantages and disadvantages of practically every type of training method - lecture, on-the-job training (OJT) simulation, games, laboratory, films, TV, etc, are discussed. The preconditions for training, requisites for maximum transfer of training, and trainee motivation are covered thoroughly and in great detail. Actual studies are cited to substantiate statements. This text provides a good overview of the training process (from assessing instructional needs, deriving objectives selecting training media, conducting training, developing criteria, pretesting, monitoring training, evaluating training, to evaluating transfer of training). A section on behavioral objectives, listing five characteristics, is provided.

Grasha, Anthony F., Developing Alternative Teaching Methods Through An Analysis of Instructional Goals. Institute for Research and Training in Higher Education, University of Cincinnati, Cincinnati, Ohio, February 15, 1974.

This text provides a practical and simple approach which allows one to design a course (or training package) which is compatible with one's goals. A distinction between content and non-content goals is made and a summary is given of eight common course designs.

Knowles, Malcom S., The Modern Practice of Adult Education. Association Press, New York, 1972.

The following assumptions about adults are made: they are moving from dependent to a self-directed state; they have a large body of experience to draw on in their learning; they tend to be problem centered. These assumptions, together with suggestions on diagnosis versus evaluation and learning environment, should be helpful in establishing a relationship between the trainer and adult trainee that is conducive to learning.

McKeachie, Wilbert J., Teaching Tips: A Guidebook for the Beginning College Teacher. Lexington, Mass., D. C. Heath, 1969. Although designed for the new college teacher, much practical material on dealing with people in the "here and now" of the training environment is presented. The direct approach used here makes easy reading and a quick reference guide. Citations identify the literature that is appropriate to each area discussed.

EXTRACTS FROM
MSIS DOCUMENTS

MODEL STATE INFORMATION SYSTEM
DATA ENTRY INSTRUCTIONS

SOURCE DOCUMENT NAME: SORT Options for Job	**EXHIBIT:** WAQC.104
PURPOSE: To determine the sequence in which output files from programs WAQC010,040,041, 050,051,060,061,070,080,090,110,111,112,113 will be sorted.	**LEGEND:** A=Alpha Numeric A/N=Alphanumeric PRE/0= RJ=Right Justify Preced LJ=Left Justify Zero

CARD COL. FROM	CARD COL. TO	INPUT DOCUMENT NAME	DESCRIPTION	ADDITIONAL INSTRUCTIONS
			At top of form enter the job identification as assigned by computer operations or scheduling.	
1	4	Card ID	Represents the Card Identifier for Sort Processing Options. Preprinted on the form as "SORT".	
5	6	Sort Sequence	Enter a two-digit number indicating the priority of the Data Element specified in Columns 7-16 in determining the sort of output records or reports. The lowest number determines the first data element to be used in sorting records. The second lowest number determines the next data element to be used in sorting records and so on. Start with Sort Sequence of '01' and continue with '02', '03' in sequence as needed.	N

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MODEL STATE INFORMATION SYSTEM
DATA ENTRY INSTRUCTIONS

SOURCE DOCUMENT NAME: SORT Options for Job

EXHIBIT: WAQC.104

PURPOSE: To determine the sequence in which output files from programs WAQC010,040,041, 050,051,060,061,070,080,090,110,111,112,113 will be sorted.

LEGEND: A=Alpha N=Numeric
A/N=Alphanumeric PRE/0= Preced
RJ=Right Justify Zero
LJ=Left Justify

CARD COL. FROM	CARD COL. TO	INPUT DOCUMENT NAME	DESCRIPTION	ADDITIONAL INSTRUCTIONS
7	16	Mnemonic Name of Data Element	Enter the Mnemonic Name of the Data Element to be used as a sort field.	A/N,LJ
17	17	Sort Mode	Enter 'A' for an ascending sequence or 'D' for a descending sequence for the Data Element specified in Columns 7-16. Ascending means that smaller or lower values will be sorted first. Example: 1,2,3,4 or A,B,C. Descending will cause the reverse to occur. Example: Z,Y,X,W.	A
18	19	Sort Sequence	Enter a two-digit number indicating the priority of the Data Element specified in Columns 20-29 in determining the sort of output records or reports.	N

MODEL STATE INFORMATION SYSTEM
DATA ENTRY INSTRUCTIONS

SOURCE DOCUMENT NAME: SORT Options for Job	EXHIBIT: WAQC.104
PURPOSE: To determine the sequence in which output files from programs WAQC010,040,041, 050,051,060,061,070,080,090,110,111,112,113 will be sorted.	LEGEND: A=Alpha N=Numeric A/N=Alphanumeric PRE/0= RJ=Right Justify Precede LJ=Left Justify Zero

CARD COL. FROM	CARD COL. TO	INPUT DOCUMENT NAME	DESCRIPTION	ADDITIONAL INSTRUCTIONS
20	29	Mnemonic Name of Data Element	Enter the Mnemonic Name of a Data Element to be used as a sort field.	A/N,LJ
30	30	Sort Mode	Enter 'A' for an ascending sequence or 'D' for a descending sequence of the Data Element specified in Columns 20-29.	A
31	32	Sort Sequence	Enter a two-digit number indicating the priority of the Data Element specified in Columns 33-42 in determining the sort of output records or reports.	N
33	42	Mnemonic Name of Data Element	Enter the Mnemonic Name of a Data Element to be used as a sort field.	A/N,LJ

MODEL STATE INFORMATION SYSTEM
DATA ENTRY INSTRUCTIONS

SOURCE DOCUMENT NAME: SORT Options for Job	**EXHIBIT:** WAQC.104
PURPOSE: To determine the sequence in which output files from programs WAQC010,040,041, 050,051,060,061,070,080,090,110,111,112,113 will be sorted.	**LEGEND:** A=Alpha N=Numeric A/N=Alphanumeric PRE/0= RJ=Right Justify Preced LJ=Left Justify Zero

CARD COL. FROM	CARD COL. TO	INPUT DOCUMENT NAME	DESCRIPTION	ADDITIONAL INSTRUCTIONS
43	43	Sort Mode	Enter 'A' for an ascending sequence or 'D' for a descending sequence of the Data Element specified in Columns 33-42.	A
44	45	Sort Sequence	Enter a two-digit number indicating the priority of the Data Element specified in Columns 46-55 in determining the sort of output records or reports.	N
46	55	Mnemonic Name of Data Element	Enter the Mnemonic Name of a Data Element to be used as a sort field.	A/N,LJ
56	56	Sort Mode	Enter 'A' for an ascending sequence or 'D' for a descending sequence of the Data Element specified in Columns 46-55.	A

MODEL STATE INFORMATION SYSTEM
DATA ENTRY INSTRUCTIONS

SOURCE DOCUMENT NAME: SORT Options for Job	**EXHIBIT:** WAQC.104
PURPOSE: To determine the sequence in which output files from programs WAQC010,040,041, 050,051,060,061,070,080,090,110,111,112,113 will be sorted.	**LEGEND:** A=Alpha N=Numeric A/N=Alphanumeric PRE/0= RJ=Right Justify Precede LJ=Left Justify Zero

CARD COL. FROM	TO	INPUT DOCUMENT NAME	DESCRIPTION	ADDITIONAL INSTRUCTIONS
57	58	Sort Sequence	Enter a two-digit number indicating the priority of the Data Element specified in Columns 59-68 in determining the sort of output records or reports.	N
59	68	Mnemonic Name of Data Element	Enter the Mnemonic Name of a Data Element to be used as a sort field.	A/N,LJ
69	69	Sort Mode	Enter 'A' for an ascending sequence or 'D' for a descending sequence of the Data Element specified in Columns 59-68.	A

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MODEL STATE INFORMATION SYSTEM
DATA ENTRY INSTRUCTIONS

SOURCE DOCUMENT NAME: Selection Form - Definition of Data Elements

EXHIBIT: WAQC 116

PURPOSE:
To determine the records to be selected from the Sample Analysis File (SAF) or Violations File (VIF).

LEGEND: A=Alpha N=Numeric
A/N=Alphanumeric PRE/0=
RJ=Right Justify Precede
LJ=Left JJustify Zero

CARD COL.		INPUT DOCUMENT NAME	DESCRIPTION	ADDITIONAL INSTRUCTIONS
FROM	TO			
1	4	Card ID	Represents the Card Identifier for the data element selection form. Preprinted on the form as "SEL1".	
5	14	Data Element Mnemonic Name	Enter the mnemonic name of the data element which will be used to determine record selection. Must be entered.	A/N,LJ
15	29	Data Element Comparative Value	Enter the value for the previously specified data element which will be used to determine record selection.	A/N,LJ
30	31	Data Element Logic ID Number	Enter a two digit number. This number must be unique for each SEL1 record. Valid numbers are 1-35. The number associates the SEL1 record with the logic defined on the SEL2 record.	N

NOTE: For further explanation review the examples detailed in the Users Manual.

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MODEL STATE INFORMATION SYSTEM
DATA ENTRY INSTRUCTIONS

SOURCE DOCUMENT NAME: Selection Form - Definition of Logic for Selection	EXHIBIT: WAQC 117
PURPOSE: To determine the selection logic to be used for the Sample Analysis File (SAF) or Violations File (VIF).	LEGEND: A=Alpha N=Numeric A/N=Alphanumeric PRE/0= RJ=Right Justify Precede LJ=Left Justify Zero

CARD COL. FROM	CARD COL. TO	INPUT DOCUMENT NAME	DESCRIPTION	ADDITIONAL INSTRUCTIONS
1	4	Card ID	Represents the Card Identifier for Logic Selection. Preprinted on the form as "SEL2".	
5	6	Relation Symbol	Enter one of the valid Relation Symbols defined on the input form. This symbol is a logical operator and defines the desired relationship between the Data Element and the Comparative Value defined on the Data Element Definition Form (SEL1). The Data Element Logic ID number associates the relation symbols to the proper Data Element. Only enter if there is a corresponding "SEL1" entry which has been defined.	A
7	74		Same as Columns 5-6.	A

NOTE: For further explanation review the examples detailed in the Users Manual.

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VII. Standard Error Messages for Processing Options

Any program which uses processing options records may produce any of the following messages:

A. Standard Error Messages & Remedial Actions for PROC Records

MESSAGE: ERROR - TWO PROC RECORDS SUPPLIED
REMEDIAL ACTION: return both records to data entry and re-enter the Processing Options record which is correct.

MESSAGE: ERROR - NO PROCESSING OPTION RECORDS WERE PROVIDED
REMEDIAL ACTION: obtain Processing Options from data entry.

MESSAGE: ERROR - PROC TYPE NOT VALID IN OPTION RECORD
REMEDIAL ACTION: check for keypunch error, if not, return option to data entry.

MESSAGE: ERROR - PROC RECORD CONTAINS AN INVALID DATE
REMEDIAL ACTION: check for keypunch error, if not, return option to data entry.

B. Standard Error Messages & Remedial Actions for SORT Records

MESSAGE: ERROR - MAXIMUM SORT-KEY SIZE HAS BEEN EXCEEDED
REMEDIAL ACTION: return option to data entry.

MESSAGE: ERROR - SORT SEQUENCE FIELD NOT NUMERIC
REMEDIAL ACTION: check for keypunch error, if not return option to data entry.

MESSAGE: ERROR - TWO SORT FIELDS HAVE THE SAME SEQUENCE NUM
REMEDIAL ACTION: check for keypunch error, if not, return option to data entry.

MESSAGE: ERROR - SORT SEQUENCE NUMBER GREATER THAN MAXIMUM
REMEDIAL ACTION: check for keypunch error, if not, return option to data entry.

MESSAGE: ERROR - SORT OPTION MNEMONIC-NAME IS INVALID
REMEDIAL ACTION: check for keypunch error, if not, return option to data entry.

MESSAGE: ERROR - SORT MODE IS NOT ASCENDING OR DESCENDING
REMEDIAL ACTION: check for keypunch error, if not, return option to data entry.

MESSAGE: ERROR - NONCONSECUTIVE SORT SEQUENCE VALUES
REMEDIAL ACTION: check for keypunch error, if not, return option to data entry.

C. Standard Error Messages & Remedial Actions for SEL1 & SEL2 Records

MESSAGE: ERROR - INVALID FILE-ID IN SEL1 RECORD
REMEDIAL ACTION: check for keypunch error, if not, return option to data entry.

MESSAGE: ERROR - TWO SEL1 RECORDS HAVE THE SAME LOGIC ID
REMEDIAL ACTION: check for keypunch error, if not, return option to data entry.

MESSAGE: ERROR - MNEMONIC NAME IS SEL1 RECORD IS INVALID
REMEDIAL ACTION: check for keypunch error, if not, return option to data entry.

MESSAGE: ERROR - SEL1 VALUE TOO LONG FOR SPECIFIED MNEMONIC
REMEDIAL ACTION: check for keypunch error, if not return option to data entry.

MESSAGE: ERROR - NO SEL1 OPTION RECORD WAS PROVIDED
REMEDIAL ACTION: return all options to data entry.

MESSAGE: ERROR - LOGIC ID NOT 1 THRU 35 IN SEL1 RECORD
REMEDIAL ACTION: check for keypunch error, if not, return option to data entry.

MESSAGE: ERROR - SEL1 DATE-FIELD VALUE IS NOT A VALID DATE
REMEDIAL ACTION: check for valid six character date, if not, return option to data entry.

MESSAGE: ERROR - SEL1 CATALOGUE-NUMBER VALUE NOT NUMERIC
REMEDIAL ACTION: check for keypunch error, if not, return option to data entry.

MESSAGE: ERROR - SEL2 OPERAND HAS NO MATCHING SEL1 RECORD
REMEDIAL ACTION: return all options to data entry.

MESSAGE: ERROR - NO SEL2 OPTION RECORD WAS PROVIDED
REMEDIAL ACTION: return all options to data entry.

MESSAGE* ERROR - MORE THAN 35 SEL2 RECORDS WERE PROVIDED
REMEDIAL ACTION: return all options to data entry.

MESSAGE: ERROR - SEL2 RECORD HAS INVALID RELATIONAL SYMBOL
REMEDIAL ACTION: check for keypunch error, if not, return option to data entry.

MODEL STATE INFORMATION SYSTEM
DATA ENTRY INSTRUCTIONS

SOURCE DOCUMENT NAME: Processing Options for Job

EXHIBIT: SRVY.100

PURPOSE: To determine the Processing Options for Program SRVY010

LEGEND: A=Alpha N=Numeric
A/N=Alphanumeric PRE/0=
RJ=Right Justify Precede
LJ=Left Justify Zero

CARD COL.		INPUT DOCUMENT NAME	DESCRIPTION	ADDITIONAL INSTRUCTIONS
FROM	TO			
			At top of form enter the job identification as assigned by Computer Operations or Scheduling.	
1	4	Card ID	Represents the Card Identifier for Processing Options. Preprinted on the form as "PROC".	
5	10	Date	Enter the Current date. Must be entered as MMDDYY, where MM is the month, DD is the day and YY is the year.	N
11	12	Type of Water Supply	Enter the Priority Selection Weight for the type of water supply. Legal values are 0.0 thru 1.0	N
13	14	Population Served	Enter the Priority Selection Weight for the Population served. Legal values are 0.0 thru 1.0	N

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MODEL STATE INFORMATION SYSTEM
DATA ENTRY INSTRUCTIONS

SOURCE DOCUMENT NAME: Processing Options for Job	**EXHIBIT:** SRVY.100
PURPOSE: To determine the Processing Options for Program SRVY010	**LEGEND:** A=Alpha N=Numeric A/N=Alphanumeric PRE/0= RJ=Right Justify Precede LJ=Left Justify Zero

CARD COL.		**INPUT DOCUMENT NAME**	**DESCRIPTION**	**ADDITIONAL INSTRUCTIONS**
FROM	**TO**			
15	16	History	Enter the Priority Selection Weight	N
		of Past	for Violation History. Legal	
		Violations	Values are 0.0 thru 1.0	
17	18	Date of	Enter the Priority Selection Weight	N
		Last	for the date of the last Sanitary	
		Sanitary	Survey. Legal Values are 0.0	
		Survey.	thru 1.0	
19	20	Type of	Enter the Priority Selection weight	N
		Source	for the type of Source Water.	
		Water	Legal Values are 0.0 thru 1.0	
			The sum total of the five selection	
			weights must equal 1.0	
21	21	Priority	Enter "Y" to produce the Priority	A
		Report	Report. Enter "N" to suppress the	
			report.	

MODEL STATE INFORMATION SYSTEM
DATA ENTRY INSTRUCTIONS

SOURCE DOCUMENT NAME: Processing Options for Job	**EXHIBIT:** SRVY.100
PURPOSE: To determine the Processing Options for Program SRVY101	**LEGEND:** A=Alpha N=Numeric A/N=Alphanumeric PRE/0= RJ=Right Justify Precede LJ=Left Justify Zero

CARD COL.		INPUT DOCUMENT NAME	DESCRIPTION	ADDITIONAL INSTRUCTIONS
FROM	TO			
22	22	Schedule	Enter "Y" to produce the Schedule	A
		Report	Report. Enter "N" to suppress the	
			report.	
23	23	Priority	Enter the Code for the type of	N
		Option	Priority Option desired. The Codes	
			and their meanings are:	
			1 = The reports will cover the	
			entire state.	
			2 = The reports will cover only	
			specific regions and/or dis-	
			tricts as specified in columns	
			28 - 47.	
			3 = The reports will distribute the	
			number of Sanitary Surveys	
			equally among all districts or	
			regions in the state.	

MODEL STATE INFORMATION SYSTEM
DATA ENTRY INSTRUCTIONS

SOURCE DOCUMENT NAME: Processing Options for Job

EXHIBIT: SRVY.100

PURPOSE: To determine the Processing Options for Program SRVY010

LEGEND: A=Alpha N=Numeric
A/N=Alphanumeric PRE/0=
RJ=Right Justify Precede
LJ=Left Justify Zero

CARD COL. FROM	CARD COL. TO	INPUT DOCUMENT NAME	DESCRIPTION	ADDITIONAL INSTRUCTIONS
24	27	Surveying Capacity	Enter the number of surveys which the specified surveying authority has the capability of performing within the specified period. Enter blanks to specify an unlimited capacity.	A/N
28	47	Region/ District	Enter the specific regions and districts to be surveyed. If column 23 is not equal to "2', these fields must be blank. If column 23 is equal to "2', one of these fields must be non-blank.	A/N
48	59	Surveying Period	Enter the period during which the Sanitary Surveys are to be scheduled. The From date and the To date must be entered in the form MMDDYY where MM is the month, DD is the day and YY is the year.	N

MODEL STATE INFORMATION SYSTEM
DATA ENTRY INSTRUCTIONS

SOURCE DOCUMENT NAME: Processing Options for Job	**EXHIBIT:** SRVY.100
PURPOSE: To determine the Processing Options for Program SRVY010	**LEGEND:** A=Alpha N=Numeric A/N=Alphanumeric PRE/0= RJ=Right Justify Precede LJ=Left Justify Zero

CARD COL. FROM	CARD COL. TO	INPUT DOCUMENT NAME	DESCRIPTION	ADDITIONAL INSTRUCTIONS
60	60	PWF Report	Enter one of the valid PWF report	A/N
		Option	options as shown on the Data Entry	
			Form. If column 28 is equal to "N",	
			this field must be left blank since	
			this option pertains to those Public	
			Water System Records that will be	
			shown on the Schedule Report.	

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MODEL STATE INFORMATION SYSTEM
DATA ENTRY INSTRUCTIONS

SOURCE DOCUMENT NAME: Sampling Scheduling Input Form	**EXHIBIT:** WAQC.124
PURPOSE: Used to determine what sample schedule output is to be produced for each Public Water System (PWS), for Program WAQC130	**LEGEND:** A=Alpha N=Numeric A/N=Alphanumeric PRE/0=Precede Zero RJ=Right Justify LJ=Left Justify

CARD COL.		INPUT DOCUMENT NAME	DESCRIPTION	ADDITIONAL INSTRUCTIONS
FROM	TO			
1	7	PWS-ID	Enter the Public Water System (PWS) identifcation Number for the PWS to be scheduled. Must be entered.	N, RJ, PRE/0
8	8	Turbidity	Enter a 'Y' if Turbidity samples are to be scheduled for this PWS. If Turbidity scheduling is not desired, enter an 'N' or leave blank. If not entered, a default of 'N' is assumed.	A
9	9	Chemicals	Enter a 'Y' if chemical samples are to be scheduled for this PWS. If chemical scheduling is not desired, enter an 'N' or leave blank. If not entered, a default of 'N' is assumed.	A
10	10	Bacteriological	Enter a 'Y' if Bacteriological samples are to be scheduled for this PWS. If Bacteriological Scheduling is not desired, enter an 'N' or leave blank. If not entered, a default of 'N' is assumed.	A

PAGE 1 OF 4

MODEL STATE INFORMATION SYSTEM
DATA ENTRY INSTRUCTIONS

SOURCE DOCUMENT NAME: Sampling Scheduling Input Form	**EXHIBIT:** WAQC.124
PURPOSE: To determine what sample schedule output is to be produced for each Public Water System (PWS), for Program WAQC130	**LEGEND:** A=Alpha N=Numeric A/N=Alphanumeric PRE/O= Precede Zero RJ= Right Justify LJ=Left Justify

CARD COL. FROM	CARD COL. TO	DATA ELEMENT MNEMONIC NAME	DESCRIPTION	ADDITIONAL INSTRUCTIONS
11	11	Natural Radio-Nuclides	Enter a 'y' if Natural Radionuclide samples are to be scheduled for this PWS. If Natural Radionuclide scheduling is not desired, enter an 'N' or leave blank. If not entered, a default of 'N' is assumed.	A
12	12	Man-made Radio-Nuclides	Enter a 'Y' if Man-Made Radionuclide Samples are to be scheduled for this PWS. If Man-Made Radionuclide scheduling is not desired, enter an 'N' or leave blank. If not entered, a default of 'N' is assumed.	A
13	13	Bacterio-logical Mailing Labels Option	Enter one of the following values if Mailing Labels are desired for those Bacteriological Samples Scheduled for this PWS:	A

PAGE 2 OF 4

MODEL STATE INFORMATION SYSTEM
DATA ENTRY INSTRUCTIONS

SOURCE DOCUMENT NAME: Sampling Scheduling Input Form	EXHIBIT: WAQC.124
PURPOSE: To determine what sample schedule output is to be produced for each Public Water System (PWS), for program WAQC130	LEGEND: A=Alpha N=Numeric A/N=Alphanumeric PRE/0= RJ=Right Justiry Precede LJ=Left Justify Zero

CARD COL. FROM	CARD COL. TO	INPUT DOCUMENT NAME	DESCRIPTION	ADDITIONAL INSTRUCTIONS
			S = One Label for this PWS	
			A = One Label for each Bateriological	
			Sample scheduled for the PWS	
			P = The number of Labels for this PWS,	
			specified in card column 14-15.	
			If 'P' is entered, a number between	
			01 and 99 inclusive must be entered	
			in cc 14-15.	
			If Mailing Labels are not desired,	
			enter an 'N' or leave blank. If not	
			entered, a default of 'N' is assumed.	
14	15	Bacterio-	If 'P' was entered in Card Column 13	N
		logical	and a specific number of Mailing	
		Mailing	Labels for the Bacteriological samples	
		Labels	scheduled for this PWS is desired,	
		Number	enter that number here.	
			If entered, must be within the range	
			of 01 through 99 inclusive, and card	

MODEL STATE INFORMATION SYSTEM
DATA ENTRY INSTRUCTIONS

SOURCE DOCUMENT NAME: Sampling Scheduling Input Form	**EXHIBIT:** WAQC.124
PURPOSE: To determine what sample schedule output is to be produced for each Public Water System (PWS), for Program WAQC130.	**LEGEND:** A=Alpha N=Numeric A/N=Alphanumeric PRE/0= RJ=Right Justify Preced LJ=Left Justify Zero

CARD COL.		INPUT DOCUMENT NAME	DESCRIPTION	ADDITIONAL INSTRUCTIONS
FROM	TO			
			column 13 must be 'P'. If a specific	
			number is not desired or card column	
			13 is not 'P', leave blank.	
16	16	Reschedule	Enter a'Y' if the Chemical samples	A
		Chemicals	scheduled for this PWS during the	
			latest scheduling processing are to be	
			scheduled again during this scheduling	
			job run. If rescheduling of chemical	
			samples for this PWS is not desired,	
			enter an 'N' or leave blank. If not	
			entered, a default of 'N' is assumed.	
17	17	Reschedule	Enter a 'Y' if the Natural or Man-Made	A
		Radio-	Radionuclide samples scheduled for	
		Nuclides	This PWS during the latest scheduling	
			processing are to be scheduled again	
			during this scheduling job run. If	
			rescheduling of Radionuclide samples	
			for this PWS is not desired, enter an	
			'N' or leave blank. If not entered,	
			a default of 'N' is assumed.	

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III. User Defined Selection of Information

The user must have the ability to select certain types of records for examination and reporting. MSIS provides this ability in special program modules through the use of two processing options: SEL1 and SEL2. The use of these options is standard throughout MSIS, although each subsystem which allows these options has its own input forms to use. (See Exhibits and Data Entry Instructions for full details on each.)

First, it is necessary to become familiar with the SEL1 and SEL2 forms and the processing logic they represent. (See figures III.1 and III.2) The example of the SEL1 form actually represents thirteen cards, one for each line, where the SEL2 form represents only one card. They are tied together logically by the Data Element Logic ID Number, columns 30-31 in the SEL1 card, and the pre-printed numbers on the SEL2 form. A maximum of thirty-five (35) SEL1 cards are allowed, and each must have a unique Data Element Logic ID Number from 01-35. If there is any duplication, the program will not run. A maximum of thirty-five (35) SEL2 cards is also allowed. The logical relationship of the multiple SEL2 cards is what is termed an "OR" condition. The logical relationship across one SEL2 card is termed an "AND" condition. These relational conditions will be further explained as examples are given.

When filling out the SEL1 form, make sure that the Data Element Comparative Value is left justified, i.e., start with the left-most block. As a general rule, use no more blocks than the maximum length of the data element as it appears on file. There are, however, several exceptions to that rule. Dates should be entered as a six position field in the format MMDDYY where MM = month, DD = day, and YY = the last two digits of the year. Dates appear on the file as five position Julian format dates but the programs will automatically convert the format of your input date to make the comparison. Turbidity units and air temperature allow for one decimal position. Maximum contaminant levels (MCL's) allow up to 15 positions: 5 whole numbers, a decimal point and nine decimal places. The decimal should be coded as part of the value in the Comparative Value. In either case, the programs will be able to make any adjustments necessary to conform to the data which is on file. Again, it must be noted that the Logic ID Number must be unique, no two SEL1 cards can have the same number.

On the SEL2 form, use only the Relational Symbols that are defined at the heading of the form. Any other symbols will stop the run of the program.

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MODEL STATE INFORMATION SYSTEM
PUBLIC WATER SYSTEM INVENTORY SUBSYSTEM

SELECTION FORM - DEFINITION OF DATA ELEMENTS

CARD ID	DATA ELEMENT MNEMONIC NAME	DATA ELEMENT COMPARATIVE VALUE	DATA ELEMENT LOGIC ID NO.
S E L 1	☐☐☐☐☐☐☐☐☐☐	☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐	☐☐
1-4	5-14	15-29	30-31
DUP 1 - 4	☐☐☐☐☐☐☐☐☐☐	☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐	☐☐
.	☐☐☐☐☐☐☐☐☐☐	☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐	☐☐
.	☐☐☐☐☐☐☐☐☐☐	☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐	☐☐
.	☐☐☐☐☐☐☐☐☐☐	☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐	☐☐
.	☐☐☐☐☐☐☐☐☐☐	☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐	☐☐
.	☐☐☐☐☐☐☐☐☐☐	☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐	☐☐
.	☐☐☐☐☐☐☐☐☐☐	☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐	☐☐
.	☐☐☐☐☐☐☐☐☐☐	☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐	☐☐
.	☐☐☐☐☐☐☐☐☐☐	☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐	☐☐
.	☐☐☐☐☐☐☐☐☐☐	☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐	☐☐
.	☐☐☐☐☐☐☐☐☐☐	☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐	☐☐
.	☐☐☐☐☐☐☐☐☐☐	☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐	☐☐

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Fig. III.1

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SELECTION FORM - DEFINITION OF LOGIC FOR SELECTION

RELATION SYMBOLS:
LT = LESS THAN
EQ = EQUAL
GT = GREATER THAN
NL = NOT LESS THAN
NG = NOT GREATER THAN
NX = NOT EXISTS (EMPTY)

CARD ID	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL
S E L 2 1-4	01	☐☐ 5-6	02	☐☐ 7-8	03	☐☐ 9-10	04	☐☐ 11-12
	05	☐☐ 13-14	06	☐☐ 15-16	07	☐☐ 17-18	08	☐☐ 19-20
	09	☐☐ 21-22	10	☐☐ 23-24	11	☐☐ 25-26	12	☐☐ 27-28
	13	☐☐ 29-30	14	☐☐ 31-32	15	☐☐ 33-34	16	☐☐ 35-36
	17	☐☐ 37-38	18	☐☐ 39-40	19	☐☐ 41-42	20	☐☐ 43-44
	21	☐☐ 45-46	22	☐☐ 47-48	23	☐☐ 49-50	24	☐☐ 51-52
	25	☐☐ 53-54	26	☐☐ 55-56	27	☐☐ 57-58	28	☐☐ 59-60
	29	☐☐ 61-62	30	☐☐ 63-64	31	☐☐ 65-66	32	☐☐ 67-68
	33	☐☐ 69-70	34	☐☐ 71-72	35	☐☐ 73-74		

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suspension, and legal action (lawsuits). This data can then

As a simple example, look at figures III.3 and III.4. The example desires to select all community Public Water Systems (PWS's) in the Cincinnati area. The plant type is coded in the Data Element Mnemonic Name and the Comparative Value of "C" is coded. This information was found in the Data Element Dictionary. The relational logic as coded would be: select all records which have a plant type equal to "C" AND an area city equal to "CINCINNATI". Remember the AND condition occurs across the SEL2 card. Each Relation Symbol corresponds to the Logic ID Number as recorded in the SEL1 cards.

By adding another line to SEL1 as in figure III.5 and an additional SEL2 form, figure III.6, the relational logic has been altered to be: select all records which have a plant type equal to "C" AND an area city equal to "CINCINNATI" OR "TOLEDO".

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MODEL STATE INFORMATION SYSTEM

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SELECTION FORM - DEFINITION OF DATA ELEMENTS

CARD ID	DATA ELEMENT MNEMONIC NAME	DATA ELEMENT COMPARATIVE VALUE	DATA ELEMENT LOGIC ID NO.
SEL1 1-4	PW-PL-TYPE 5-14	C 15-29	01 30-31
DUP 1 - 4	PW-PL-ACTY	CINCINNATI	02
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Fig. III.3

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SELECTION FORM - DEFINITION OF LOGIC FOR SELECTION

RELATION SYMBOLS: LT = LESS THAN GT = GREATER THAN NG = NOT GREATER THAN
EQ = EQUAL NL = NOT LESS THAN NX = NOT EXISTS(EMPTY)

CARD ID	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL
S E L 2 1-4	01	E Q 5-6	02	E Q 7-8	03	☐☐ 9-10	04	☐☐ 11-12
	05	☐☐ 13-14	06	☐☐ 15-16	07	☐☐ 17-18	08	☐☐ 19-20
	09	☐☐ 21-22	10	☐☐ 23-24	11	☐☐ 25-26	12	☐☐ 27-28
	13	☐☐ 29-30	14	☐☐ 31-32	15	☐☐ 33-34	16	☐☐ 35-36
	17	☐☐ 37-38	18	☐☐ 39-40	19	☐☐ 41-42	20	☐☐ 43-44
	21	☐☐ 45-46	22	☐☐ 47-48	23	☐☐ 49-50	24	☐☐ 51-52
	25	☐☐ 53-54	26	☐☐ 55-56	27	☐☐ 57-58	28	☐☐ 59-60
	29	☐☐ 61-62	30	☐☐ 63-64	31	☐☐ 65-66	32	☐☐ 67-68
	33	☐☐ 69-70	34	☐☐ 71-72	35	☐☐ 73-74		

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Fig. III.4

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MODEL STATE INFORMATION SYSTEM

PUBLIC WATER SYSTEM INVENTORY SUBSYSTEM

SELECTION FORM - DEFINITION OF DATA ELEMENTS

CARD ID	DATA ELEMENT MNEMONIC NAME	DATA ELEMENT COMPARATIVE VALUE	DATA ELEMENT LOGIC ID NO.
SEL1 1-4	PW-PL-TYPE 5-14	C 15-29	01 30-31
DUP 1 - 4	PW-PL-ACTY	CINCINNATI	02
.	PW-PL-ACTY	TOLEDO	03
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Fig. III.5

MODEL STATE INFORMATION SYSTEM

PUBLIC WATER SYSTEM INVENTORY SUBSYSTEM

SELECTION FORM - DEFINITION OF LOGIC FOR SELECTION

RELATION SYMBOLS: LT = LESS THAN
EQ = EQUAL
GT = GREATER THAN
NL = NOT LESS THAN
NG = NOT GREATER THAN
NX = NOT EXISTS(EMPTY)

CARD ID	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL
S E L 2 1-4	01	E Q 5-6	02	☐☐ 7-8	03	E Q 9-10	04	☐☐ 11-12
	05	☐☐ 13-14	06	☐☐ 15-16	07	☐☐ 17-18	08	☐☐ 19-20
	09	☐☐ 21-22	10	☐☐ 23-24	11	☐☐ 25-26	12	☐☐ 27-28
	13	☐☐ 29-30	14	☐☐ 31-32	15	☐☐ 33-34	16	☐☐ 35-36
	17	☐☐ 37-38	18	☐☐ 39-40	19	☐☐ 41-42	20	☐☐ 43-44
	21	☐☐ 45-46	22	☐☐ 47-48	23	☐☐ 49-50	24	☐☐ 51-52
	25	☐☐ 53-54	26	☐☐ 55-56	27	☐☐ 57-58	28	☐☐ 59-60
	29	☐☐ 61-62	30	☐☐ 63-64	31	☐☐ 65-66	32	☐☐ 67-68
	33	☐☐ 69-70	34	☐☐ 71-72	35	☐☐ 73-74		

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Fig. III.6

It should be noted that when using the "NX" relation symbol, care should be taken when coding the Comparative Value field. If a field is considered non-existant and is an alphanumeric field, its initialized value will be blanks. So the Comparative Value should be left blank. (See figure III.7, Logic ID Number 01). Likewise, if the field is numeric, zeros should be coded in the Comparative Value. (See figure III.7, Logic ID Number 02). The type of field can be determined from the Data Element Dictionary. If the "Data Type" field contains a "A/N", that means that the field is alphanumeric. If it contains an "N", it is a numeric field. The relational logic for this example is: select all records for which the owner name is non-existant AND the last survey date is non-existant.

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MODEL STATE INFORMATION SYSTEM

PUBLIC WATER SYSTEM INVENTORY SUBSYSTEM

SELECTION FORM - DEFINITION OF DATA ELEMENTS

CARD ID	DATA ELEMENT MNEMONIC NAME	DATA ELEMENT COMPARATIVE VALUE	DATA ELEMENT LOGIC ID NO.
SEL1 1-4	PW-OWNA 5-14	 15-29	01 30-31
DUP 1 - 4	PW-PL-SURV	000000	02
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Fig III 7

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PUBLIC WATER SYSTEM INVENTORY SUBSYSTEM

SELECTION FORM - DEFINITION OF LOGIC FOR SELECTION

RELATION SYMBOLS:
LT = LESS THAN
EQ = EQUAL
GT = GREATER THAN
NL = NOT LESS THAN
NG = NOT GREATER THAN
NX = NOT EXISTS (EMPTY)

CARD ID	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL
S E L 2 1-4	01	N X 5-6	02	N X 7-8	03	☐☐ 9-10	04	☐☐ 11-12
	05	☐☐ 13-14	06	☐☐ 15-16	07	☐☐ 17-18	08	☐☐ 19-20
	09	☐☐ 21-22	10	☐☐ 23-24	11	☐☐ 25-26	12	☐☐ 27-28
	13	☐☐ 29-30	14	☐☐ 31-32	15	☐☐ 33-34	16	☐☐ 35-36
	17	☐☐ 37-38	18	☐☐ 39-40	19	☐☐ 41-42	20	☐☐ 43-44
	21	☐☐ 45-46	22	☐☐ 47-48	23	☐☐ 49-50	24	☐☐ 51-52
	25	☐☐ 53-54	26	☐☐ 55-56	27	☐☐ 57-58	28	☐☐ 59-60
	29	☐☐ 61-62	30	☐☐ 63-64	31	☐☐ 65-66	32	☐☐ 67-68
	33	☐☐ 69-70	34	☐☐ 71-72	35	☐☐ 73-74		

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Fig III.8

Now for a more complex example. First look at figures III.9 through III.12. See if you can determine what the relational logic is. Remember that an "AND" relation goes across one SEL2 card and an "OR" relation goes from one SEL2 card to the next. The relational logic is: select all records for which the PWS ID is "greater than" 0000001 AND the emergency capacity is "less than" 2,000,000 gallons, OR the plant type is "equal" to "N" for non-community AND the emergency capacity is "greater than" 1,000 gallons, OR the emergency capacity is "less than" 2,000,000 gallons AND the last survey date is "less than" or previous to 010177 AND the plant type is "equal" to "N" for non-community.

There are several situations of note in this example. First, see that the emergency capacity appears twice on the SEL1 form. This is a valid situation because two different Comparative Values are being used in different logic sequences. Second, see that two of the logic ID Numbers have been used twice in different logic sequences. This too is a valid situation because of the use of the OR condition between SEL2 cards. Third, note that we have three entirely independent conditions, any of which will cause the record to be selected if the condition is met.

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MODEL STATE INFORMATION SYSTEM

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SELECTION FORM - DEFINITION OF DATA ELEMENTS

CARD ID 1-4	DATA ELEMENT MNEMONIC NAME 5-14	DATA ELEMENT COMPARATIVE VALUE 15-29	DATA ELEMENT LOGIC ID NO. 30-31
SEL1	PW-ID	0000001	01
DUP 1 - 4	PW-PL-EMER	0002000000	02
.	PW-PL-TYPE	N	03
.	PW-PL-EMER	000000100	04
.	PW-PL-SURV	010177	05
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Fig III.9

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SELECTION FORM - DEFINITION OF LOGIC FOR SELECTION

RELATION SYMBOLS: LT = LESS THAN
EQ = EQUAL
GT = GREATER THAN
NL = NOT LESS THAN
NG = NOT GREATER THAN
NX = NOT EXISTS (EMPTY)

CARD ID	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL
S E L 2 1-4	01	G T 5-6	02	L T 7-8	03	☐☐ 9-10	04	☐☐ 11-12
	05	☐☐ 13-14	06	☐☐ 15-16	07	☐☐ 17-18	08	☐☐ 19-20
	09	☐☐ 21-22	10	☐☐ 23-24	11	☐☐ 25-26	12	☐☐ 27-28
	13	☐☐ 29-30	14	☐☐ 31-32	15	☐☐ 33-34	16	☐☐ 35-36
	17	☐☐ 37-38	18	☐☐ 39-40	19	☐☐ 41-42	20	☐☐ 43-44
	21	☐☐ 45-46	22	☐☐ 47-48	23	☐☐ 49-50	24	☐☐ 51-52
	25	☐☐ 53-54	26	☐☐ 55-56	27	☐☐ 57-58	28	☐☐ 59-60
	29	☐☐ 61-62	30	☐☐ 63-64	31	☐☐ 65-66	32	☐☐ 67-68
	33	☐☐ 69-70	34	☐☐ 71-72	35	☐☐ 73-74		

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Fig. III.10

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SELECTION FORM - DEFINITION OF LOGIC FOR SELECTION

RELATION SYMBOLS: LT = LESS THAN
EQ = EQUAL
GT = GREATER THAN
NL = NOT LESS THAN
NG = NOT GREATER THAN
NX = NOT EXISTS (EMPTY)

CARD ID	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL
S E L 2 1-4	01	☐☐ 5-6	02	☐☐ 7-8	03	E Q 9-10	04	G T 11-12
	05	☐☐ 13-14	06	☐☐ 15-16	07	☐☐ 17-18	08	☐☐ 19-20
	09	☐☐ 21-22	10	☐☐ 23-24	11	☐☐ 25-26	12	☐☐ 27-28
	13	☐☐ 29-30	14	☐☐ 31-32	15	☐☐ 33-34	16	☐☐ 35-36
	17	☐☐ 37-38	18	☐☐ 39-40	19	☐☐ 41-42	20	☐☐ 43-44
	21	☐☐ 45-46	22	☐☐ 47-48	23	☐☐ 49-50	24	☐☐ 51-52
	25	☐☐ 53-54	26	☐☐ 55-56	27	☐☐ 57-58	28	☐☐ 59-60
	29	☐☐ 61-62	30	☐☐ 63-64	31	☐☐ 65-66	32	☐☐ 67-68
	33	☐☐ 69-70	34	☐☐ 71-72	35	☐☐ 73-74		

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Fig III.11

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SELECTION FORM - DEFINITION OF LOGIC FOR SELECTION

RELATION SYMBOLS: LT = LESS THAN
EQ = EQUAL
GT = GREATER THAN
NL = NOT LESS THAN
NG = NOT GREATER THAN
NX = NOT EXISTS (EMPTY)

CARD ID	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL
S E L 2 1-4	01	☐☐ 5-6	02	L T 7-8	03	E Q 9-10	04	☐☐ 11-12
	05	L T 13-14	06	☐☐ 15-16	07	☐☐ 17-18	08	☐☐ 19-20
	09	☐☐ 21-22	10	☐☐ 23-24	11	☐☐ 25-26	12	☐☐ 27-28
	13	☐☐ 29-30	14	☐☐ 31-32	15	☐☐ 33-34	16	☐☐ 35-36
	17	☐☐ 37-38	18	☐☐ 39-40	19	☐☐ 41-42	20	☐☐ 43-44
	21	☐☐ 45-46	22	☐☐ 47-48	23	☐☐ 49-50	24	☐☐ 51-52
	25	☐☐ 53-54	26	☐☐ 55-56	27	☐☐ 57-58	28	☐☐ 59-60
	29	☐☐ 61-62	30	☐☐ 63-64	31	☐☐ 65-66	32	☐☐ 67-68
	33	☐☐ 69-70	34	☐☐ 71-72	35	☐☐ 73-74		

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Fig III.12

As a final example, consider the situation of selecting a range of values. Under normal circumstances, the field would be entered twice in the mnemonic name columns and an upper and lower range entered in the comparative values with the appropriate relational symbols used on the SEL2 card. However, certain problems arise when you are working with fields that have multiple occurrences within a record, such as the Variances and Exemptions Contaminant ID does within the PWF record.

First, let us group the following figures to illustrate the different situations that may arise. Group figures III.13 and III.14 as group one, figures III.13 and III.15 as group two, and III.13 and III.16 as group three. Then, let us use the following value groups for the contaminant ID fields which occur a possibility of four times in each PWF record:

Value Group One	Value Group Two	Value Group Three
3010	4000	3010
4000	4005	4005
4010	4010	4010
4020	4020	4020

Now, using the group one figures as an example, let us demonstrate what will happen with the three value groups. First, with Value Group One, the record would be selected because there is a value "equal" to 4000 AND there is a value "equal" to 4010. The record for Value Group Two would also be selected, and for the same reason. However, with Value Group Three, the record would not be selected because there is no value 4000.

Next, look at the group two figures. Here we are looking for an outside range of numbers. The record for Value Group One would be selected because there is a value "less than" 4000 AND there is a value "greater than" 4010. With Value Group Two, the record would not be selected because there is no value "less than" 4000. Using Value Group Three, the record would be selected because both conditions would be met.

Finally, look at figure group three. Here, we are looking for an inside range of numbers. And this is where our problem lies. With Value Group One, the record would be selected. But look closer at the results. True, there are values "greater than" 4000, AND there are values "less than" 4010. But there is actually no value between 4000 and 4010. With Value Groups Two and Three, there are values that fall within the range. But the entire situation is victim to circumstance. Therefore, the results obtained when selecting a data element based on an inside range that occurs more than once is questionable.

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PUBLIC WATER SYSTEM INVENTORY SUBSYSTEM

SELECTION FORM - DEFINITION OF DATA ELEMENTS

CARD ID 1-4	DATA ELEMENT MNEMONIC NAME 5-14	DATA ELEMENT COMPARATIVE VALUE 15-29	DATA ELEMENT LOGIC ID NO. 30-31
SEL1	PW-VE-CTAM	4000	01
DUP 1 - 4	PW-VE-CTAM	4010	02
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Fig III.13

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SELECTION FORM - DEFINITION OF LOGIC FOR SELECTION

RELATION SYMBOLS: LT = LESS THAN GT = GREATER THAN NG = NOT GREATER THAN
EQ = EQUAL NL = NOT LESS THAN NX = NOT EXISTS (EMPTY)

CARD ID	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL
S E L 2 1-4	01	E Q 5-6	02	E Q 7-8	03	☐☐ 9-10	04	☐☐ 11-12
	05	☐☐ 13-14	06	☐☐ 15-16	07	☐☐ 17-18	08	☐☐ 19-20
	09	☐☐ 21-22	10	☐☐ 23-24	11	☐☐ 25-26	12	☐☐ 27-28
	13	☐☐ 29-30	14	☐☐ 31-32	15	☐☐ 33-34	16	☐☐ 35-36
	17	☐☐ 37-38	18	☐☐ 39-40	19	☐☐ 41-42	20	☐☐ 43-44
	21	☐☐ 45-46	22	☐☐ 47-48	23	☐☐ 49-50	24	☐☐ 51-52
	25	☐☐ 53-54	26	☐☐ 55-56	27	☐☐ 57-58	28	☐☐ 59-60
	29	☐☐ 61-62	30	☐☐ 63-64	31	☐☐ 65-66	32	☐☐ 67-68
	33	☐☐ 69-70	34	☐☐ 71-72	35	☐☐ 73-74		

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Fig. III.14

PWSI020,080 PWSI.108

MODEL STATE INFORMATION SYSTEM

PUBLIC WATER SYSTEM INVENTORY SUBSYSTEM

SELECTION FORM - DEFINITION OF LOGIC FOR SELECTION

RELATION SYMBOLS: LT = LESS THAN
EQ = EQUAL
GT = GREATER THAN
NL = NOT LESS THAN
NG = NOT GREATER THAN
NX = NOT EXISTS (EMPTY)

CARD ID	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL
S E L 2 1-4	01	L T 5-6	02	G T 7-8	03	☐☐ 9-10	04	☐☐ 11-12
	05	☐☐ 13-14	06	☐☐ 15-16	07	☐☐ 17-18	08	☐☐ 19-20
	09	☐☐ 21-22	10	☐☐ 23-24	11	☐☐ 25-26	12	☐☐ 27-28
	13	☐☐ 29-30	14	☐☐ 31-32	15	☐☐ 33-34	16	☐☐ 35-36
	17	☐☐ 37-38	18	☐☐ 39-40	19	☐☐ 41-42	20	☐☐ 43-44
	21	☐☐ 45-46	22	☐☐ 47-48	23	☐☐ 49-50	24	☐☐ 51-52
	25	☐☐ 53-54	26	☐☐ 55-56	27	☐☐ 57-58	28	☐☐ 59-60
	29	☐☐ 61-62	30	☐☐ 63-64	31	☐☐ 65-66	32	☐☐ 67-68
	33	☐☐ 69-70	34	☐☐ 71-72	35	☐☐ 73-74		

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Fig. III.15

MODEL STATE INFORMATION SYSTEM

PUBLIC WATER SYSTEM INVENTORY SUBSYSTEM

SELECTION FORM - DEFINITION OF LOGIC FOR SELECTION

RELATION SYMBOLS:
LT = LESS THAN
EQ = EQUAL
GT = GREATER THAN
NL = NOT LESS THAN
NG = NOT GREATER THAN
NX = NOT EXISTS (EMPTY)

CARD ID	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL	DATA ELEMENT LOGIC ID NO.	RELATION SYMBOL
S E L 2 1-4	01	G T 5-6	02	L T 7-8	03	☐☐ 9-10	04	☐☐ 11-12
	05	☐☐ 13-14	06	☐☐ 15-16	07	☐☐ 17-18	08	☐☐ 19-20
	09	☐☐ 21-22	10	☐☐ 23-24	11	☐☐ 25-26	12	☐☐ 27-28
	13	☐☐ 29-30	14	☐☐ 31-32	15	☐☐ 33-34	16	☐☐ 35-36
	17	☐☐ 37-38	18	☐☐ 39-40	19	☐☐ 41-42	20	☐☐ 43-44
	21	☐☐ 45-46	22	☐☐ 47-48	23	☐☐ 49-50	24	☐☐ 51-52
	25	☐☐ 53-54	26	☐☐ 55-56	27	☐☐ 57-58	28	☐☐ 59-60
	29	☐☐ 61-62	30	☐☐ 63-64	31	☐☐ 65-66	32	☐☐ 67-68
	33	☐☐ 69-70	34	☐☐ 71-72	35	☐☐ 73-74		

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Fig. III.16

In summary, then, follow these basic rules when filling out the SEL1 and SEL2 forms:

> Data Element Mnemonic Name must be spelled correctly Refer to Data Element Dictionary or Record Description for correct spelling
>
> Comparative Value must be left justified and not longer than the maximum data length as recorded in the Data Element Dictionary with the exception of Turbidity Units, Air Temperature, MCL's which must have their decimal points coded, and dates which will be coded as six digits
>
> Data Element Logic ID Number must be unique
>
> Use only the six relation symbols as defined at the heading of the SEL2 form
>
> "AND" logical relationship exists across the SEL2 card
>
> "OR" logical relationship exists from one SEL2 card to the next

IV. User Defined Report Sequencing

Many of the reports produced by MSIS have a processing option called SORT. It gives the user the option of sequencing a report in a manner other than the natural sequence of the file from which the information is being obtained. If a report contains such an option, there will be a standard input form associated with that report which the user must fill out and submit with the job request in order to have the report in the requested sequence. (See Exhibits and Data Entry Instructions for full details on each report.)

Computer sorts are performed using a "sort key". This key can be defined as a body of information, in order of decreasing importance, used to sequence a greater body of information. The various data elements contained within that sort key are ordered in importance, major to minor, by the user. Therefore, the major key appears first within the sort key followed by fields, in their order of decreasing importance, down to the minor key. This terminology is important to understand in learning how to fill out the input form required tc request a resequencing of a report.

Secondly, it is important to understand that the sorts are limited in such a way that the information contained in the sort key cannot exceed thirty (30) characters in their combined lengths. Therefore, when a user is filling out one of the input forms, he must use either a record description or the Data Element Dictionary (DED) to determine the lengths and mnemonic names of the data elements with which he is working. There is one exception to the rule of combining data lengths; if a data element contains more than fifteen (15) characters, only the first fifteen characters will be used in creating the sort key.

All of the input forms for the various reports have the same general format. When filling out the form, order the sort key fields from major to minor significance down the page starting with the number 01. This is a must because the column labeled "Sort Priority" will be used by the computer program to determine major (01) to minor (maximum of 30) significance. The user can fill out a maximum of six input forms per report, of course, as long as the length of the sort key requested is less than 31.

Additionally, each data element can be ordered in either ascending or descending sequence. When working with a data element that could potentially be alphabetic or numeric, it should also be noted that with IBM hardware, numbers are considered "higher" than alphabetic characters. Therefore a number would sort higher than a letter. With many other companies, however, the reverse is true. If your hardware is other than IBM, it is recommended that you ask your programming staff about the "collating sequence" of your

MSIS040

MSIS.100

MODEL STATE INFORMATION SYSTEM
STANDARD PROCESSING SUBSYSTEM
STANDARD HISTORY FILE SELECTION

SORT OPTIONS FOR JOB ________________

CARD ID	SORT SEQUENCE	MNEMONIC NAME OF DATA ELEMENT	SORT MODE	
S O R T 1-4	☐☐ 5-6	☐☐☐☐☐☐☐☐☐☐ 7-16	☐ 17	A=ASCENDING D=DESCENDING
	☐☐ 18-19	☐☐☐☐☐☐☐☐☐☐ 20-29	☐ 30	A=ASCENDING D=DESCENDING
	☐☐ 31-32	☐☐☐☐☐☐☐☐☐☐ 33-42	☐ 43	A=ASCENDING D=DESCENDING
	☐☐ 44-45	☐☐☐☐☐☐☐☐☐☐ 46-55	☐ 56	A=ASCENDING D=DESCENDING
	☐☐ 57-58	☐☐☐☐☐☐☐☐☐☐ 59-68	☐ 69	A=ASCENDING D=DESCENDING

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Fig. IV.1

machine so that you can make the proper decision when ordering your data.

The following table should be useful in helping the user determine if he would like a report from a certain file to be sequenced in a manner other than its natural sequence.

FILE NAME	NATURAL SEQUENCE
Enforcement Actions File (EAF)	Case ID
Operator & Mailing File (OMF)	Addressee ID
Public History File (PHF)	PWS-ID
Periodic Sample File (PSF)	PWS-ID; Contaminant ID; Location Code; Sample type, date, time and key; Record Type
Public Water File (PWF)	PWS-ID
Regulations File (RGF)	Contaminant ID, Regulation Level
Sample Analysis File (SAF)	PWS-ID; Contaminant ID; location Code; Sample type, date, time and key; Record Type
Standard History File (SHF)	File ID, Record ID, Data Element Catalogue Number, Current Update Date
Variances and Exemptions File (VEF)	Variances and Exemptions ID
Violations File (VIF)	Violation ID

Note: The above files are not a complete list of permanent files, but the only permanent files for which a sort may be done.